DEPARTMENT OF TRANSPORTATION
DES-OE MS #43
1727 30TH Street, 2ND Floor
Sacramento, CA 95816

June 27, 2003

04-SF-80-12.6/13.2
04-0120R4
ACBRIM-080-1(097)N

Addendum No. 5

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in THE CITY AND COUNTY OF SAN FRANCISCO FROM YERBA BUENA TUNNEL TO 0.6 KM EAST OF THE YERBA BUENA TUNNEL.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on August 19, 2003.

This addendum is being issued to revise the Project Plans, the Notice to Contractors and Special Provisions, and the Proposal and Contract.

Project Plan Sheets 1, 5, 6, 7, 8, 9, 10, 17, 18, 20, 22, 23, 41, 42, 43, 45, 47, 54, 62, 63, 70, 71, 83, 83A, 83B, 83C, 83D, 83E, 83F, 94, 96, 97, 99, 100, 102, 104, 105, 116, 143, 147, and 148 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheet No. 11 is deleted.

In the Special Provisions, in the "NOTICE TO CONTRACTORS," the tenth paragraph is revised as follows:

"A meeting to address bidder's technical inquiries will be held on July 2, 2003 at 9:00 a.m. (Pacific Time) in the Auditorium, District 4 Office, 111 Grand Ave, Oakland, CA 94612. The purpose of the meeting is to provide preliminary answers to bidder's technical inquiries. Prospective bidders unable to attend in person may dial the teleconference call-in number 510-286-2230. The call leader is Brian Maroney."

In the Special Provisions, Section 5-1.01, "WORKING DRAWINGS," the second paragraph is revised as follows:

"Working drawings shall be submitted to the following location:

California Department of Transportation
Office of the Resident Engineer, Contract 04-0120R4
280 Beale Street
San Francisco, CA 94105"

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In the Special Provisions, Section 5-1.075, "BUY AMERICA REQUIREMENTS," the first paragraph is revised as follows:

"Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1982 (Section 165) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a), and the regulations adopted pursuant thereto. Steel and iron for the components designed by the Contractor in conformance with the provisions of "Contractor Design" of these special provisions is temporary and is therefore not subject to the provisions of Buy America. In conformance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the members shown on the project plans provided for advertisement, and not designated as "temporary", shall occur in the United States; with the exception that pig iron and processed, pelletized and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting, and other coatings that protect or enhance the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements."

In the Special Provisions, Section 5-1.13, "PROJECT INFORMATION," subsection "INFORMATION HANDOUT," subsection "Structure Materials Information," items 1 and 8 are revised as follows:

"1. Project specific design criteria "Design Criteria, San Francisco-Oakland Bay Bridge East Span Seismic Safety Project, Self Anchored Suspension Bridge, dated April 8, 2002 by T. Y. Lin International/Moffatt & Nichol Engineers, a Joint Venture"
8. Feasibility Study for the West Tie-In of the South/South Detour Staging Alternative"

In the Special Provisions, Section 5-1.13, "PROJECT INFORMATION," subsection "INFORMATION HANDOUT," subsection "Structure Materials Information," items 2, 6, and 7 are deleted.

In the Special Provisions, Section 5-1.14, "CONTRACTOR DESIGN," is revised as attached.

In the Special Provisions, Section 5-1.25, "PAYMENTS," in the second paragraph, Items D is deleted and Item B is revised as follows:

"B. Contractor Design $5,000,000"

In the Special Provisions, Section 5-1.25, "PAYMENTS," the following paragraph is added after the third paragraph:

"In determining the partial payments to be made to the Contractor, only the following listed materials will be considered for inclusion in the payment as materials furnished but not incorporated in the work:

A. Contractor Design."

In the Special Provisions, Section 5-1.35, "RELATIONS WITH UNITED STATES COAST GUARD," the fourth paragraph is revised as follows:

"The Contractor's attention is directed to Sections 7-1.01, "Laws to be Observed," 7-1.11, "Preservation of Property," and 7-1.12, "Indemnification and Insurance," of the Standard Specifications, and to the sections entitled "Sound Control Requirements" and "Maintaining Traffic" of these special provisions."

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In the Special Provisions, Section 10-1.15, "TEMPORARY BYPASS STRUCTURE," is revised as attached.

In the Special Provisions, Section 10-1.16, "TEMPORARY SUPPORTS," is revised as attached.

In the Special Provisions, Section 10-1.21, "SUBMITTAL CAMPUS," is deleted.

In the Special Provisions, Section 10-1.22, "OBSTRUCTIONS," is revised as attached.

In the Special Provisions, Section 10-1.235, "SEWER VIDEO SURVEY," is added as attached.

In the Special Provisions, Section 10-1.245, "VITRIFIED CLAY PIPE SEWERS," is added as attached.

In the Special Provisions, Section10-1.29, "MAINTAINING TRAFFIC," is revised as attached.

In the Special Provisions, Section 10-1.30, "CLOSURE REQUIREMENTS AND CONDITIONS," is revised as attached.

In the Special Provisions, Section 10-1.31, "TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE," is revised as attached.

In the Special Provisions, Section 10-1.38, "EXISTING HIGHWAY FACILITIES," the subsection, "EXISTING UNDERGROUND FACILITIES (TEMPORARY BYPASS STRUCTURE)," is added after subsection "EXISTING BUILDING NO. 206," and is attached.

In the Special Provisions, Section 10-1.38, "EXISTING HIGHWAY FACILITIES," subsection "BRIDGE REMOVAL," the following paragraph is added after the first paragraph:"

> "Portions of the existing structure designated on the plans as “Exist 1934” refer to the appearance of structure as it was constructed, based on the original construction plans from approximately 1934. Portions of the existing structure designated on the plans as “Exist 1964” refer to portions of the structure that were modified from the original construction, based on construction plans from approximately 1964."

In the Special Provisions, Section 10-1.38, "EXISTING HIGHWAY FACILITIES," subsection "BRIDGE REMOVAL" subsection "2. BRIDGE REMOVAL," the fourth paragraph is revised as follows:

> "Miscellaneous facilities, including utilities, which are attached to portions of bridge members being removed shall be relocated, as shown on the plans, prior to beginning bridge removal operations."

In the Special Provisions, Section 10-1.54, "GRIND EXISTING CONCRETE PAVEMENT," is deleted.

In the Special Provisions, Section 10-3.01, "DESCRIPTION," is revised as attached.

In the Special Provisions, Section 10-3.02, "COST BREAK-DOWN," is revised as attached.

In the Special Provisions, Section 10-3.03, "MAINTAINING EXISTING AND TEMPORARY ELECTICAL SYSTEMS," the last paragraph is deleted.

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In the Special Provisions, Section 10-3.07, "CONDUCTORS, CABLES AND WIRING," subsection "SHIELDED -TWISTED PAIR ARMORED CABLES," the first sentence is revised as follows:

"The instrumentation armored cables shall be installed for the south-south staging."

In the Special Provisions, Section 10-3.09, "PAYMENT," the second paragraph is revised as follows:

"The contract lump sump price paid for Electrical Work (Stage 2) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved, complete in place, including manuals, preparation and delivery of any and all proposals, plans, submittals, or other documents to the Engineer, warranty work or modifications, software or software changes, testing and training, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

In the Special Provisions, Section 10-4.04, "UNDERGROUND FUEL GAS DISTRIBUTION PIPING," is added as attached.

In the Proposal and Contract, the Engineer's Estimate Items 32, 78 and 80 are revised, Items 84 and 85 are added and Items 6, 60, 77 and 83 are deleted as attached.

To Proposal and Contract book holders:

Replace the entire Engineer's Estimate in the Proposal with the attached revised Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This office is sending this addendum by UPS overnight mail to Proposal and Contract book holders to ensure that each receives it.

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Office Engineer

Attachments

5-1.14 CONTRACTOR DESIGN

This work shall consist of designing and providing detailed design plans, supplemental technical special provisions and quantities of various items of work for the construction of the Temporary Bypass Structure, including all appurtenances required for bridge mounted utilities, deck drainage system, and signs, at locations shown on the plans and as specified in "Temporary Bypass Structure," in these special provisions, and in these special provisions.

The Temporary Bypass Structure shall be designed in accordance with the design criteria as shown on the plans, and as specified in these special provisions. Engineering design and calculations, and independent design check calculations shall be submitted to the Engineer for review and acceptance.

Detailed design plans, supplemental technical special provisions and associated quantities of items of work shall be submitted to the Engineer for acceptance and authorization for construction.

Engineering design and calculations for the Temporary Bypass Structure and all associated detailed design plans, supplemental technical special provisions and quantities of items of work shall be signed by an Engineer who is registered as a Civil Engineer in the State of California.

Independent design check calculations for the Temporary Bypass Structure and all associated detailed design plans and quantities of items of work shall be signed by another Engineer who is registered as a Civil Engineer in the State of California.

Two of the Contractor's representatives shall be designated as "Design Manager" and "Contractor's Engineer." Design Manager and Contractor's Engineer shall conform to the following:

Design Manager

The Design Manager shall be an engineer who is registered as a Civil Engineer in the State of California, and shall have a minimum of ten years of experience in designing bridges of the type proposed by the Contractor and have managed at least one design project comparable in size, difficulty and cost. Proof of the registration and the required experience shall be submitted to the Engineer for approval.

The Design Manager shall:

1. Be responsible for the Contractor’s design quality control and quality assurance (QC/QA) plan and the quality of the Contractor designs,
2. Verify design compliance with the requirements of the plans and these special provisions,
3. Coordinate the design submittal schedule with the Engineer,
4. Coordinate the Contractor responses to design comments issued by the Engineer, and
5. Ensure that design documents and records are kept in compliance with the requirements of these special provisions.

Contractor's Engineer

The Contractor's Engineer, who is registered as a Civil Engineer in the State of California, shall be the engineer of record who will be responsible for producing, stamping and signing all of the Engineering design calculations for the Temporary Bypass Structure (TBS) and all associated detailed design plans, supplemental technical special provisions and quantities of items of work.

The Contractor's Engineer shall certify in writing that the TBS is constructed in conformance with the authorized detailed design plans and supplemental technical special provisions.

DESIGN QC/QA PLAN

The Contractor shall prepare and submit a design QC/QA plan in accordance with the requirements of these special provisions. The design QC/QA plan shall address, as a minimum, the items described in “Quality Control” in these special provisions.

The design QC/QA plan shall include the following:

A. Method to be employed by the Contractor to track design tasks, design submittals, approvals, and re-submittals.
B. Reference section of the Standard Specifications, these special provisions, design criteria, or other design document required or referenced in the production of each design submittal.
C. A time-scaled logic diagram which shows the schedule of all design activities and associated design submittals, and demonstrates any interdependency between separate submittals.

D. Allowable time for review of the submittal by the Engineer as specified in the Standard Specifications and these special provisions.
E. In the event that several related submittals with review times on the controlling/critical path are submitted simultaneously, or an additional submittal is submitted for review before the review of a previous submittal has been completed, the Contractor shall designate the sequence in which the submittals are to be reviewed.
F. Identification of the first occurrence of any controlling/critical path operation affected by each submittal and a contingency plan describing how the designer will address any required redesign of any submittals previously authorized for construction.

As a minimum, items C and F of the design QC/QA plan shall be submitted by the Contractor with the bid proposal.

Within 45 days after approval of the contract, the Contractor shall submit to the Engineer the design QC/QA plan in conjunction with the Baseline Schedule. Attention is directed to the "Progress Schedule (Critical Path Method)" elsewhere in these special provisions for the definitions of Baseline Schedule and Controlling Operation.

DESIGN

Attention is directed to "Project Information," of these special provisions regarding the materials information handout for foundation and design information.

Designing the TBS and the preparation of detailed design plans, production of supplemental technical special provisions, and quantities calculations shall be in conformance with these special provisions and the following:

1. Plans Preparation Manual of the Department
2. Bridge Design Aids Manual of the Department
3. Bridge Design Details Manual of the Department
4. Bridge Memo to Designers Manual of the Department
5. Plans, Specifications and Estimates Guide of the Department
6. Information and Procedures Guide of the Office of Special Funded Projects of the Department
7. Current Electrical and Mechanical codes
8. Current 1999 Standard Special Provisions and Bridge Reference Specifications of the Department
9. July 1999 Standard Specifications of the Department
10. July 1999 Standard Plans of the Department
11. Policy on High and Low Risk Underground Facilities within Highway Rights of Way of the Department

The approach slab, where shown on the plans, shall be included in the Contractor's design of the TBS.

Expansion joints connecting superstructure segments shall be included in the Contractor's design of either the west tie-in superstructure or east tie-in superstructure. Expansion joints shall be modular type. Modular expansion joints having designs where movable components are metal on metal will not be permitted.

Where steel forms are proposed for concrete deck construction, the design shall either accommodate removal of steel forms after completion of the deck, or provide for application of an acoustic insulating material to the underside of the deck that is approved by the Engineer.

All permanent supporting elements of the TBS shall be designed to conform to the Department's standards for a permanent highway structure and these special provisions. Permanent supporting elements of the TBS shall not contain structural components that are traditionally acceptable for the construction of temporary structures used to facilitate construction, such as falsework or temporary supports. Structural elements such as timber foundations, timber posts and beams, timber bracing, cables, and the like will not be permitted as part of the permanent supporting elements of the TBS.

The foundation design shall conform to the design criteria as shown on the plans, and as supplemented by the following foundation information provided in the information handout:

1. "Geotechnical Foundation Report for YBI Approach and Self-Anchored Suspension Bridge," June 2002 by Fugro-Earth Mechanics, Joint Venture
2. "Final Yerba Buena Island Geotechnical Site Characterization Report, San Francisco Oakland Bay Bridge East Span Seismic Safety Project," December 2001 by Fugro-Earth Mechanics, Joint Venture

At the Contractor's option and expense, the Contractor may conduct additional foundation investigations to facilitate foundation design. Such investigations shall conform to the provisions in Section 49-1.03, "Determination of Length," of the Standard Specifications.

The Contractor shall prepare and submit a Foundation Report for all proposed TBS foundation designs, regardless of whether they are based on the information contained in the information handout or result from investigations conducted by the Contractor. The Foundation Report shall be prepared in conformance with the requirements in the Information and Procedures Guide of the Office of Special Funded Projects of the Department and shall be signed by an engineer who is registered as a Geotechnical Engineer in the State of California. This same engineer shall certify in writing that the TBS foundations are constructed in conformance with the Foundation Report. For foundation designs based on the information contained in the information handout, the Foundation Report shall be a certification by the Contractor's registered Geotechnical Engineer, that the information is adequate for the design, and no further investigation is required.

DESIGN SUBMITTALS

The Contractor shall prepare and submit the following Design Submittals to the Engineer for acceptance and authorization of construction:

Proposal Drawing Submittal
Preliminary Design Submittal
Final Design Submittal
Construction Submittal

The term "acceptance" shall mean that the submittal has been received, that it contains all of the required elements and that there is sufficient information, as determined by the Engineer, to properly evaluate the submittal.

The term "authorized for construction" shall mean that the submittal contains all of the required elements, including clearly meeting the constraints of the design criteria shown on the plans, satisfactorily addresses design review comments provided by the Engineer, and that there is sufficient information, as determined by the Engineer, to inspect resulting fabrication and construction.

The contents of each Design Submittal shall conform to the following:

Proposal Drawing Submittal

Proposal drawings are drawings submitted by the Contractor, on the day following bid opening, for evaluation of the Contractor's design by the Department. Proposal drawings shall:

1. Contain a drawing index with drawing numbers and drawing titles
2. Be in metric units
3. Comply with the following manuals of the Department:

    a. Plans Preparation Manual
    b. Bridge Design Aids Manual
    c. Bridge Design Details Manual
    d. Bridge Memo to Designers Manual
    e. Information and Procedures Guide of the Office of Special Funded Projects

4. Be of sufficient detail to depict the TBS elements and components, as defined in "Temporary Bypass Structure," elsewhere in these special provisions, in plan and elevation, and show at the minimum:

    a. Bridge geometry
    b. Each bent in section labeled with a station
    c. The obstruction free clearance at the point of minimum vertical clearance, and traffic opening width
    d. Each foundation location and type labeled with station
    e. Locations and types of joints, both expansion and construction
    f. Locations and types of bearings
    g. The arrangement and material type and size of each structural member to demonstrate load paths from the superstructure to the ground through the substructure and foundation

h. Locations and type of components to be designed for ductile behavior
i. Locations and type of components to be capacity protected
j. Fundamental periods of vibration for each segment

5. Include a Type Selection Memo by segment in conformance with the requirements in Chapter 1-29 of the Bridge Memo to Designers Manual
6. Include a structure construction sequencing plan

Preliminary Design Submittal
Preliminary design submittal shall consist of the following:

1. Preliminary design information package
2. Detailed preliminary design drawings
3. Draft supplemental technical special provisions

The preliminary design submittal shall be submitted to the Engineer by the Contractor after the Department has accepted the Contractor's proposal drawing submittal. Preliminary design submittal shall be submitted by segment of the TBS.

Preliminary design information package shall, as a minimum, include the following:

1. A statement describing any modifications to or deviations from the information submitted with the proposal drawing submittal
2. Expected expansion joint movements
3. Preliminary loading and linear elastic response spectra force and displacement results (i.e. axial, moment, shear) on all primary components due to design loads conforming to the design criteria shown on the plans
4. Preliminary Inelastic static pushover results showing deformation capacity of all ductile primary members at the displacement limit state (DLS) displacements
5. Preliminary Foundation Report, submitted with foundation elements only

The Contractor shall also furnish additional information as requested by the Engineer to facilitate review of the preliminary design information package.

Detailed preliminary design drawings shall, as a minimum, include the following:

General Plans
Structure Plans
Abutment cross-sections
Foundation Plans
Pier (i.e. tower/bent/column) cross-sections
Foundation Detail Plans
Typical Sections
Girder layouts or framing plans
Expansion joint details
Bearing details
Structural joint and connection details

Detailed preliminary design drawings shall:

1. Contain a drawing index with drawing numbers and drawing titles
2. Be in metric units
3. Comply with the following manuals of the Department:

a. Plans Preparation Manual
b. Bridge Design Aids Manual
c. Bridge Design Details Manual

d. Bridge Memo to Designers Manual
e. Information and Procedures Guide of the Office of Special Funded Projects

4. Be clearly marked "NOT FOR CONSTRUCTION"
5. Show the arrangement and material type and size of each structural member to demonstrate load paths from the superstructure to the ground through the substructure and foundation.
6. Be of sufficient detail to (a) define the TBS elements in plan and elevation, including deck drainage and overhead and bridge mounted signs, (b) define the mounting details for electrical and mechanical systems (c) demonstrate conformance to the requirements of the contract documents.
7. Contain preliminary utility relocation plans identifying relocation of impacted utility within boundary of the construction based on new potholing performed by the Contractor. Contractor may require additional potholing to verify impacted utilities as approved by the Engineer.

Draft supplemental technical special provisions shall be prepared as specified under the heading "Supplemental Technical Special Provisions" of these special provisions.

Final Design Submittal

Final design submittal shall consist of the following:

1. Final design information package
2. Detailed final construction drawings
3. Complete TBS design and independent check calculations
4. Final Foundation Report
5. Complete quantity calculations
6. Final supplemental technical special provisions

The final design submittal shall be submitted to the Engineer by the Contractor after the Department has accepted the Contractor's preliminary design submittal. Final design submittal shall be submitted by element of each segment of the TBS.

Final design information package shall, as a minimum, include the following:

1. A statement describing any modifications to or deviations from the information submitted with the preliminary design submittal, including a detailed description of resolution of reviewer comments
2. Any revised document that has changed since the preliminary design submittal
3. Structure construction sequencing plan
4. Resident Engineer's (RE) Pending File contents as specified in the Information and Procedures Guide of the Office of Special Funded Projects of the Department

The Contractor shall also furnish additional information as requested by the Engineer to facilitate review of the final design information package.

Detailed final construction drawings shall conform to the requirements specified above for preliminary design drawings, with the following minimum additional requirements:

1. Bear the stamp, signature, and license expiration date of the Contractor's Engineer or designee, who is responsible for developing the drawing
2. Contain final utility relocation plans identifying relocation of impacted utility within boundary of the construction based on new potholing performed by the Contractor. Contractor may require additional potholing to verify impacted utilities as approved by the Engineer.

Complete TBS design and independent check calculations shall be prepared as specified under the heading "TBS Design Calculations" of these special provisions.

Complete quantity calculations shall be prepared as specified under the heading "Quantity Calculations" of these special provisions.

Final supplemental technical special provisions shall be prepared as specified under the heading "Supplemental Technical Special Provisions" of these special provisions.

Construction Submittal

The construction submittal shall be submitted to the Engineer by the Contractor after the Department has reviewed the Contractor's final design submittal. The construction submittal shall be submitted by segment of the TBS.

The construction submittal shall address all of the comments by the Engineer during the review of the final design submittal. The construction submittal shall contain the following:

1. Construction information package
2. Revised detailed final construction drawings
3. Revised TBS design and independent check calculations
4. Revised quantity calculations
5. Revised final supplemental technical special provisions

The construction information package shall, as a minimum, include the following:

1. A statement describing any modifications to or deviations from the information submitted with the final design submittal, including a detailed description of resolution of reviewer comments
2. Any revised document that has changed since the final design submittal
3. Revised construction sequencing plan
4. Revised RE Pending File contents

The Contractor shall also furnish additional information as requested by the Engineer to facilitate review of the construction information package.

Revised detailed final construction drawings shall conform to the requirements specified above for final design drawings.

Revised TBS design and independent check calculations shall be prepared as specified under the heading "TBS Design Calculations" of these special provisions.

Revised quantity calculations shall be prepared as specified under the heading "Quantity Calculations" of these special provisions.

Revised Final supplemental technical special provisions shall be prepared as specified under the heading "Supplemental Technical Special Provisions" of these special provisions.

The construction submittal, consisting of final detailed design drawings and supplemental technical special provisions, in conjunction with the standard specifications and these special provisions, shall be of sufficient detail to (a) construct the TBS, including deck drainage and overhead and bridge mounted signs, (b) install the electrical and mechanical systems, and (c) demonstrate conformance to the requirements of the Contract documents.

TBS Design Calculations

TBS design calculations shall include both design and independent check calculations. TBS design calculations shall be submitted to the Engineer. Calculations shall include all analysis and computations necessary to design and check the TBS, including layout, structural elements, and operational features (such as deck drainage and overhead and bridge mounted signs and mounting details for electrical and mechanical systems). Design calculations shall be submitted by segment of the TBS.

1. Design calculations shall:

    a. Be bound separately for each segment
    b. Bear the stamp, signature, and license expiration date of the Contractor's Engineer or designee, who is responsible for developing the calculations
    c. Be clearly labeled as design or check calculations, indicating the contract number and title, and description of the calculations
    d. Contain a table of contents with page numbers; all calculation pages shall be numbered
    e. Be decipherable and organized so that the design logic can be easily followed
    f. Contain documentation of assumptions, conclusions, references and design logic
    g. Contain copies of design charts, with specific entries highlighted that were used in the design
    h. Contain only final input and output of computer runs
    i. Contain hand calculations, or computer-generated calculations.

2. Independent Check Calculations: Independent check calculations shall be prepared by the Contractor using a qualified individual who has not been involved with the design of the TBS. Independent check calculations shall bear the State of California Registered Professional Engineer Registration seal with signature, license number and certificate expiration date of the design engineer who is responsible for the independent check. The independent check shall include all analysis and computations necessary to independently check all aspects of the design of the TBS structural elements, and shall be prepared in the same manner as specified for design calculations. The independent checker shall not review the design calculations prior to preparing the independent check calculations. Independent check calculations shall be submitted with the design calculations by segment and element of the TBS.

Quantity Calculations

Quantity calculations and quantity check calculations shall be prepared, compared and resolved, and submitted in accordance with the requirements of Chapter 11 of Bridge Design Aids Manual and the Plans, Specifications and Estimates Guide of the Department and the Department's current standards for quantity calculations and quantity check calculations for electrical and mechanical systems.

Supplemental Technical Special Provisions

Supplemental technical special provisions shall be prepared to complement these special provisions, and shall bear the State of California Registered Professional Engineer Registration seal, with signature, license number and certificate expiration date of the engineer who is responsible for developing the supplemental technical special provisions. Supplemental technical special provisions shall be prepared using and editing the Standard Special Provisions and Bridge Reference Specifications of the Department. The Standard Special Provisions are statewide, approved special provisions and are posted at the Division of Office Engineer website (http://www.dot.ca.gov/hq/esc/oe/specs_html/index.html). The Bridge Reference Specifications are statewide special provisions used for special bridge applications, and are posted at the Structure Office Engineer website (http://www.dot.ca.gov/hq/esc/structurespecs/). The Standard Special Provisions and Bridge Reference Specifications will hereinafter be referred to as "SSPs."

All standard and non-standard items of work to be used in the construction of the TBS shall be addressed by the supplemental technical special provisions, regardless of how those items of work are being paid. Even in circumstances where the work is addressed by the Standard Specifications, the items of work shall be addressed in the supplemental technical special provisions by including a reference to the applicable Standard Specification.

Editing of the SSPs shall conform to the requirements in the Plans, Specifications and Estimates Guide of the Department and these special provisions. This includes preparing the supplemental technical special provisions in the version of Microsoft Word currently used by the Division of Office Engineer. When editing the SSPs, deviation from the instructions contained within the SSPs will not be permitted without prior written approval by the Engineer. The Contractor shall obtain prior written approval from the Engineer to modify existing SSPs beyond that allowed in the instructions. Deletion of references to payment clauses for items of work is permitted and expected. The Contractor shall obtain prior written approval from the Engineer to add technical special provisions that originate from a source other than the SSPs.

Department SSPs shall neither be edited to customize the specification to job conditions or location, nor shall quality control and quality assurance aspects be deleted or altered. Department SSPs shall not be edited to change plural to singular or singular to plural or to rewrite text in an attempt to improve it.

Supplemental technical special provisions shall not include provisions that are of an administrative nature or any language attempting to alter the terms of the Contract. Any such language will be rejected.

Supplemental technical special provisions shall be organized as follows:

1. Section 8, "Materials" – This section shall contain all materials specifications and all amendments to materials specifications as provided in the special provisions included for the prospective items of work.
2. Section 10, "Construction Details" - This section shall contain all remaining supplemental technical special provisions for various items of work used in the construction of the TBS.

All conflicts between the supplemental technical special provisions for the TBS and roadway portions of the work shall be resolved by the Contractor before submitting the supplemental technical special provisions to the Engineer for review.

The Engineer will return the supplemental technical special provisions to the to the Contractor for correction if they do not conform to the requirements in these special provisions.

QUALITY CONTROL

The Contractor shall prepare and submit design submittals in accordance with the Contractor's approved design QC/QA plan. The Contractor shall maintain evidence of quality control measures taken during preparation of design submittals. Evidence of quality control measures taken shall be in the form of (a) final marked-up documents and (b) annotated checklists prepared by an individual who has reviewed the documents for conformance to the requirements of the contract documents. Annotated checklists shall depict the design procedures and submittal preparation requirements as found in the manuals and documents referenced in this section of these special provisions, and other specific design requirements listed in these special provisions.

Each design drawing and supplemental technical special provision shall have a check print, representing the final content of the design drawing or supplemental technical special provision. The designer and independent checker shall review the drawing or supplemental technical special provision for (a) conformance to the requirements of the contract documents, (b) incorporation or resolution of marked-up comments, and (c) compatibility with all related design elements. As evidence of their review, the designer and independent checker shall sign and date the check print.

Prior to submittal, the Contractor, using a qualified individual, shall review the design submittal, using annotated checklists, to verify conformance to the requirements of the contract documents.

The annotated checklists shall include, as a minimum, confirmation of the following:

1. The design submittals have been prepared in conformance with the requirements of these special provisions
2. The TBS design, including overhead and bridge mounted signs, conforms to the structural design criteria as shown on the contract plans
3. The design of mounting details for electrical and mechanical systems conforms to the design criteria as shown on the contract plans
4. The TBS design is constructable
5. The electrical and mechanical system design is installable
6. Layout is in compliance with the requirements of the plans and specifications
7. The TBS required construction work area is within the work limits shown on the contract plans
8. Utilitiy conflicts have been identified and addressed in a manner that is consistent with Caltrans policy on high- and low-risk utilities. Utilities relocation by the Contractor are identified and timed to avoid construction conflicts.
9. Drainage has a clear path from source to outfall and storm water run-off pollution prevention is identified
10. Lighting is in compliance with the requirements of the plans and specifications. Lighting foundation have been included
11. Maintenance of the structures can be performed with existing Caltrans practices
12. Environmentally sensitive areas will not be affected by construction
13. Contractor work access is planned to remain within the limits allowed by the contract
14. The TBS and electrical system design has been coordinated with the interfaces shown on the contract plans
15. Schedule for completion and lane closures is obtainable
16. The Design uses materials that are commercially available to the Contractor by the time of construction

Any submission by the Contractor of designs, design plans, and supplemental technical special provisions prepared by the Contractor for Department review shall constitute an affirmation by the Contractor that the work detailed in the Contractor prepared design documents are complete, buildable by the Contractor, and comply with the design criteria shown on the plans and these special provisions and as directed by the Engineer.

DESIGN SUBMITTAL REVIEW

The Contractor shall submit the design submittals in accordance with these special provisions and as follows:

Item	Number of Copies for Each Submittal Stage		
	Preliminary Design Submittal	Final Design Submittal	Construction Submittal
Design Information Package	5	5	5
Design Drawings (paper)	10	10	10
Design Drawings (electronic files)	2	2	2
Design Calculations	N/A	5	5
Check Calculations	N/A	5	5
Quantity Calculations	N/A	3	3
Foundation Report	N/A	3	3
Supplemental Technical Special Provisions (paper)	10	10	10
Supplemental Technical Special Provisions (electronic files)	2	2	2

While the Contractor may submit design submittals for review in any order of segment and segment element, the design submittals will only be reviewed by the Department in the following priority order:

1. Preliminary design submittals for foundations of a structure segment will not be reviewed prior to receiving preliminary substructure and superstructure design submittals for the same structure segment.
2. Final design submittals for elements of a structure segment will not be reviewed until the Engineer has reviewed and provided comments on preliminary design submittals of the same segment.
3. Preliminary design submittals for the electrical or mechanical system on a structure segment will not be reviewed prior to reviewing preliminary superstructure design submittals for the same structure segment.
4. Final utility relocation plans will not be authorized by the Engineer unless approved by the utility owner.

Design submittals made by the Contractor that do not comply with the specified priority order, will not be considered as delaying the Contractor's controlling operation on the critical path.

Design Review Process

Upon receipt of a submittal after it has been approved by the Contractor's Engineer, the Engineer will review a design submittal for completeness. Within five working days of the receipt of the submittal by the Engineer, the Engineer will notify the Contractor in writing if the submittal is determined to be complete or incomplete. If the submittal is determined to be complete, it will be "accepted" by the Engineer, the review period will begin on that day. If the submittal is determined to be incomplete, it will be returned to the Contractor for resubmittal.

A design submittal that is found to be compliant will accepted and will be reviewed for conformance to the requirements of the contract documents. Submittals that do not conform to all design quality control requirements of these special provisions will not be accepted and will be returned to the Contractor, and no Department review time will be accrued toward the returned submittal. No compensation will be allowed for any costs incurred or for delay in completing the work resulting from submittals that are not accepted by the Engineer.

The Department will return written comments to the Contractor at the conclusion of the design review for each submittal. The Contractor shall address all comments and modify designs as required by the comments in conformity with the plans, these special provisions, and as directed by the Engineer.

When approved by the Contractor's Engineer, and accepted and authorized by the Engineer, the Contractor shall prepare and submit the Construction Submittal. The Construction Submittal, including detailed plans and supplemental technical special provisions, shall become Contract Plans, authorized for construction by the Department.

With the exception of the construction of pile components for foundation elements, the Contractor shall not begin construction of a structure element prior to making the final design submittal and receiving authorization from the Engineer. The Contractor shall not begin construction of pile components for foundation elements prior to making the preliminary design submittal that is accepted by the Engineer. Ordering or fabricating materials prior to receiving construction authorization by the Department, will be at the Contractor's risk.

The time to be provided for the Engineer's review of the design submittals shall be as follows:

Design Submittal	Review Time - Weeks
Preliminary Design	2
Final Design	4
Construction Submittal	1

Should the Engineer fail to review the complete design submittal within the time specified, and the Contractor's controlling operation on the critical path is delayed (as determined by the Engineer) by the Engineer's failure to review within the time specified, an extension of time will be granted in conformance with the provisions in Section 8-1.07, "Liquidated Damages," of the Standard Specifications and in "Progress Schedule (Critical Path Method)," of these special provisions. Should the Engineer fail to review the complete design package submittal within the time specified, compensation, if any, will be made in accordance with Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and "Time Related Overhead," of these special provisions.

Design submittals shall be submitted sufficiently in advance of the start of the affected work to allow time for review by the Engineer and correction by the Contractor of the submittal contents without delaying the work. The time shall be proportional to the complexity of the work, but in no case shall the time be less than the review time as specified for the type of design submittal as required elsewhere in these special provisions.

Should the Contractor submit several related submittals with review times on the controlling/critical path, or an additional submittal for review before the review of a previously submittal has been completed, the time to be provided for the review of any submittal in the sequence shall be not less than the review time specified for that submittal, plus 7 calendar days for each submittal of higher priority which is still under review.

DESIGN CHANGE CONTROL

If the Contractor's design changes at any time during the development of the designs or during the construction of the TBS, after receiving authorization for construction, the Contractor shall resubmit designs for review and authorization by the Engineer prior to commencement with the changed work. Changes to the structural system, including overhead and bridge mounted signs, shall have both preliminary designs and final designs resubmitted to the Engineer for authorization as described herein. Changes to the deck drainage and mounting of electrical or mechanical systems or to non-structural components of the TBS shall have only final designs resubmitted to the Engineer for authorization as described herein.

PAYMENT

Contractor design shall be paid for on the basis of lump sum.

The contract lump sum price paid for contractor design shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing and submitting contractor design, including all work to verify the locations of existing utilities within the boundary of the construction, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.15 TEMPORARY BYPASS STRUCTURE

Attention is directed to "Contractor Design," elsewhere in these special provisions regarding the design , acceptance, and authorization for construction by the Department of the temporary bypass structure.

This work shall consist of constructing the temporary bypass structure (TBS) complete in place, including all required bridge barrier railing, bridge paving, bridge mounted utilities and related utility relocations, deck drainage system, and signs, at the location shown on the plans and in accordance with the Contractor's design plans that are accepted and authorized for construction by the Department.

GENERAL

The TBS, is shown schematically on the plans with the required design criteria to enable the Contractor to develop the design. The TBS, as shown on the plans, is divided into three bridge structure segments: 1) West Tie-In, 2) Viaduct, and 3) East Tie-In. Additionally, temporary structures designated in the design criteria shown on the plans as Important Construction, shall be considered as bridge segments of the TBS. Each bridge segment contains the following structure elements: a) foundation(s), b) substructure(s), c) superstructure, and appurtenances as shown on the plans. Each bridge element consists of individual components, such as piles, pile cap, columns, bent cap, girders, and other individual structural members.

Unless otherwise authorized by the Department, the TBS shall be constructed in conformance with the construction sequence, also defined as steps, as shown on the plans.

The approach slab, where shown on the plans, shall be included in the Contractor's design of the TBS.

Expansion joints connecting superstructure segments shall be included in the Contractor's design. Expansion joints shall be modular type. Modular expansion joints having designs where movable components are metal on metal will not be permitted.

Attention is directed to "Project Information," of these special provisions regarding the materials information handout for foundation and design information. Concrete piles shall not be permitted for the Viaduct and East Tie-In. Piles for the Viaduct and East Tie-In, with the exception of the abutment, shall be driven steel piles.

Attention is directed to the following sections of these special provisions regarding permit restrictions and regulations that may impact TBS design and construction:

A. Relations with the U.S. Coast Guard
B. Relations with the Regional Water Quality Control Board
C. Relations with United States Fish and Game Service
D. Maintaining Traffic
E. Sound Control Requirements
F. Obstructions

Attention is directed to "Order of Work" of these special provisions. The TBS order of work shall have the following limitations per segment:

A. Substructure construction shall not be permitted until preliminary design submittals for foundation elements have been accepted and authorized for construction by the Department. The Contractor shall not begin construction of pile components for foundation elements prior to making the preliminary design submittal that is accepted by the Engineer.
B. Public traffic will not be permitted on the TBS until superstructure final design submittals for superstructure elements have been accepted and authorized for construction by the Department.

Attention is directed to Section 7-1.16, "Contractor's Responsibility for the Work and Materials," of the Standard Specifications.

The Contractor may proceed with the work after receiving acceptance of the final design plans submittal by the Department. Prior to proceeding with such work, the Contractor shall notify the Engineer of such operations and shall not begin such operations until the Engineer, or the Engineer's authorized representative, is at the work site to observe the operation. The presence of the Engineer, or the Engineer's authorized representative, shall not relieve the Contractor of the responsibility to pay for any work performed by the Contractor that does not comply with the design plans authorized by the Department.

MEASUREMENT AND PAYMENT

Temporary Bypass Structure, East Tie-In will be paid by the lump sum to the limits shown on the contract plans and the Contractor's design plans that are accepted and authorized for construction by the Department.

Temporary Bypass Structure, Viaduct will be paid by the lump sum to the limits shown on the contract plans and the Contractor's design plans that are accepted and authorized for construction by the Department.

Temporary Bypass Structure, West Tie-in will be paid by the lump sum to the limits shown on the contract plans and the Contractor's design plans that are accepted and authorized for construction by the Department.

The contract lump sum price paid for each segment of the temporary bypass structure listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the temporary bypass structure, complete in place, as shown on the contract plans and the Contractor's design plans that are accepted and authorized for construction by the Department, and as specified in the standard specifications, the authorized supplemental technical special provisions, and these special provisions.

10-1.16 TEMPORARY SUPPORTS

Temporary structures required for construction of the TBS, and temporary supports for existing structures during bridge removal work, shall be designed, furnished, constructed, monitored, maintained, and removed in conformance with the design criteria shown on the plans and the provisions in these special provisions.

The term "temporary support," as used hereinafter, shall include all supports required for construction of the Contractor's design of the TBS, temporary supports for existing structures during bridge removal work, and the following items designated on the plans:

A. Temporary Structures designated as "Important Construction" in the design criteria shown on the plans:

    1. Temporary Supports for the Move-In Operation
    2. Temporary Supports for the Move-Out Operation
    3. Temporary Shoring
    4. Support Structure (Locations A through D)

B. Temporary construction falsework
C. Temporary stabilization
D. Cradles
E. Temporary anchorage
F. Temporary restraint
G. Structural anchorage
H. Wall type support
I. Horizontal tie
J. Temporary anchor
K. Transverse restraint

Construction sequence and application of temporary support jacking, restraint, or tie loads shall be as shown on the plans and as designated by the Contractor on the Contractor's design plans that are accepted and authorized for construction by the Department. Proposed changes to the construction sequence and application of temporary support jacking, restraint, or tie loads shall be subject to the Engineer's approval.

Temporary supports shall include jacking assemblies and appurtenant items necessary to jack and support the structures.

Attention is directed to the sections "Order of Work" and "Maintaining Traffic" of these special provisions regarding the construction sequences for temporary supports for the use of public traffic.

Attention is directed to "Existing Highway Facilities," elsewhere in these special provisions, regarding as-built plans for the existing structures.

Acceptance and authorization for construction of the Contractor's temporary support design plans by the Department, or temporary support inspection performed by the Engineer, will in no way relieve the Contractor of full responsibility for the temporary supports.

TEMPORARY SUPPORT DESIGN AND DRAWINGS

Design plans and calculations for temporary structures designated in the design criteria shown on the plans as Important Construction, shall be prepared and submitted as part of the design submittals as specified in "Contractor Design," elsewhere in these special provisions. Design plans and design calculations for all other temporary supports shall be prepared and submitted as specified in this section of these special provisions.

The Contractor shall submit to the Engineer design plans and design calculations for the temporary supports. Such design plans and design calculations shall be approved by the Contractor's Engineer. The temporary support design plans and design calculations shall conform to the requirements in "Working Drawings" elsewhere in these special provisions.

Design plans for any part of the temporary supports shall include stress sheets, anchor bolt layouts, shop details, and erection and removal plans.

The temporary support design plans shall include descriptions and values of all loads, including construction equipment loads, descriptions of equipment to be used, complete details and calculations for jacking and supporting the existing structure, and descriptions of the displacement or deflection monitoring system. The displacement or deflection monitoring system shall conform to the design criteria shown on the plans and specified in these special provisions, and shall include equipment to be used, location of control points, method and schedule of taking measurements, and shall also include provisions to jack the structure should settlement occur in the temporary supports.

A redundant system of supports shall be provided during the entire jacking operation for backup should any of the jacks fail. The redundant system shall include stacks of steel plates added as necessary to maintain the redundant supports at each jack location within 6 mm of the jacking sill or corbels.

When footing type foundations are to be used, the Contractor shall determine the bearing value of the soil and shall show the values assumed in the design of the temporary supports on the temporary support drawings. Anticipated temporary support foundation settlement shall be shown on the temporary support drawings.

When pile type foundations are to be used, the temporary support drawings shall show the maximum horizontal distance that the top of a temporary support pile may be pulled in order to position it under its cap. The temporary support plans shall also show the maximum allowed deviation of the top of the pile, in its final position, from a vertical line through the point of fixity of the pile.

The Contractor may use the permanent piles as part of the temporary support foundation. Permanent piles shall not be moved or adjusted from the locations shown on the Contractor's design plans that are accepted and authorized for construction by the Department. Any use of the permanent piles and the loads imposed on them shall be shown on the temporary support drawings. Should the Contractor propose to provide piles longer than required for the work in order to support the temporary supports above the elevation of the top of the footing and later cut off the piles at their final elevation, shear devices adequate to transfer all pile reactions into the footing will be required.

Temporary support footings shall be designed to carry the load imposed upon them without exceeding the estimated soil bearing values and anticipated settlements.

Bracing shall be provided, as necessary, to withstand all imposed loads during erection and removal of any temporary supports. The temporary support drawings shall show provisions for such temporary bracing or methods to be used to conform to these requirements during each phase of erection and removal. Wind loads shall be included in the design of such bracing or methods. Wind loads shall conform to the design criteria shown on the plans and the applicable provisions in Section 51-1.06A(1), "Design Loads," of the Standard Specifications.

The temporary support design calculations shall show a summary of computed stresses in the (1) temporary supports, (2) connections between temporary supports and the existing structure and (3) existing load supporting members. The computed stresses shall include the effect of the jacking sequence. The temporary support design calculations shall also include a lateral stiffness assessment of the temporary support system and conform to the design values shown on the plans and as designated by the Contractor on the Contractor's design plans that are accepted and authorized for construction by the Department.

The design of temporary supports will not be accepted and authorized for construction by the Department unless it is based on the use of loads and conditions which are no less severe than those described in "Temporary Support Design Criteria," of these special provisions and on the use of allowable stresses which are no greater than those described in Section 51-1.06A(2), "Design Stresses, Loadings, and Deflections," of the Standard Specifications.

If falsework loads are imposed on temporary supports, the temporary supports shall also satisfy the deflection criteria described in Section 51-1.06A(2), "Design Stresses, Loadings, and Deflections," of the Standard Specifications.

TEMPORARY SUPPORT DESIGN CRITERIA

The design of the temporary supports shall conform to the requirements in the design criteria shown on the plans and as specified in these special provisions.

The temporary supports shall support the initial jacking loads and the minimum temporary support design loads and the minimum lateral design forces as determined by the Contractor's Engineer, and as shown on the Contractor's design plans that have been accepted and authorized for construction by the Department. The vertical design loads shall be adjusted for the weight of temporary supports and jacks, construction equipment loads and additional loads imposed by the Contractor's operations. The construction equipment loads shall be the actual weight of the construction equipment but in no case shall be less than 960 N/m^2 of deck surface area of the frame involved. A frame is defined as the portion of the bridge between expansion joints.

The temporary supports shall resist the lateral design forces as determined by the Contractor's Engineer, and as shown on the Contractor's design plans that have been accepted and authorized for construction by the Department. The lateral design forces shall be applied at the point where the supporting structural element meets the superstructure as shown in the design criteria on the plans. The lateral design forces to be resisted shall be increased to be compatible with the temporary support lateral stiffness of the temporary supports designed by the Contractor's Engineer, and as shown on the Contractor's design plans that have been accepted and authorized for construction by the Department. The temporary supports resisting longitudinal lateral loads shall be placed within the frame supporting the structural element to be removed.

The existing structure shall be mechanically connected to the temporary supports. The temporary supports shall be mechanically connected to their foundations. The mechanical connections shall be capable of resisting the lateral temporary support design forces. Friction forces developed between the existing structure and temporary supports shall not be used to reduce the lateral forces and shall not be considered as an effective mechanical connection. The mechanical connections shall be designed to tolerate adjustments to the temporary support frame throughout the use of the temporary supports.

If the concrete is to be prestressed, the temporary supports shall be designed to support any increased or readjusted loads caused by the prestressing forces.

Manufactured Assemblies

Manufactured assemblies shall conform to the provisions in Section 51-1.06A(2), "Design Stresses, Loadings, and Deflections," of the Standard Specifications and these special provisions.

Each jack shall be equipped with either a pressure gage or a load cell for determining the jacking force. Pressure gages shall have an accurately reading dial at least 150 mm in diameter. Each jack shall be calibrated by a private laboratory approved by the Transportation Laboratory within 6 months prior to use and after each repair. Each jack and its gage shall be calibrated as a unit with the cylinder extension in the approximate position that it will be at final jacking force and shall be accompanied by a certified calibration chart. Load cells shall be calibrated and provided with an indicator by which the jacking force is determined.

SPECIAL LOCATIONS

Attention is directed to Section 51-1.06A(3), "Special Locations," of the Standard Specifications. All reference to falsework in this section shall also apply to temporary supports.

TEMPORARY SUPPORT CONSTRUCTION

The construction of the temporary supports shall conform to the requirements as shown on the plans and the Contractor's design plans that have been accepted and authorized for construction by the Department, and as specified in these special provisions.

Attention is directed to paragraphs 1 through 7 of Section 51-1.06B, "Falsework Construction," of the Standard Specifications. All reference to falsework in these paragraphs shall also apply to temporary supports.

Welding, welder qualification, and inspection of welding for all steel members shall conform to the requirements of ANSI/AASHTO/AWS D1.1.

Prior to proceeding with bridge removal, the Contractor's Engineer shall inspect the temporary supports, including jacking and displacement monitoring systems, for conformity with the design plans that have been accepted and authorized for construction by the Department. The Contractor's Engineer shall certify in writing that the temporary supports, including jacking and displacement monitoring systems, conform to the design plans that have been accepted and authorized for construction by the Department, and that the material and workmanship are satisfactory for the purpose intended. A copy of this certification shall be available at the site of the work at all times.

The Contractor's Engineer shall be present at the bridge site at all times when jacking operations or adjustments are in progress and when bridge removal operations are in progress. The Contractor's registered engineer shall inspect the jacking and removal operation and report in writing on a daily basis the progress of the operation and the status of the remaining structure. A copy of the daily report shall be available at the site of the work at all times. Should an unplanned event occur, the Contractor's registered engineer shall submit immediately to the Engineer for approval, the procedure or proposed operation to correct or remedy the occurrence.

The Contractor shall perform an initial survey as part of the displacement monitoring system to record the location of the existing structure prior to the commencement of any work. Two copies of the survey shall be signed by an engineer, who is registered as a Civil Engineer in the State of California, and submitted to the Engineer.

Vandal-resistant displacement monitoring equipment shall be provided and maintained. Vertical and horizontal displacements of the temporary supports and the existing structure shall be monitored continuously during jacking operations and shall be accurately measured and recorded at least weekly during removal and reconstruction work. As a minimum, elevations shall be taken prior to the start of jacking operations, immediately after jacking is complete, after bridge removal is complete, before connecting the retrofitted superstructure to the substructure, and after the temporary supports have been removed. The existing structure shall be monitored at locations where supporting the structural elements are removed. Control points at each location shall be located near the center and at both edges of the superstructure. The records of vertical and horizontal displacement shall be signed by an engineer who is registered as a Civil Engineer in the State of California and available to the Engineer at the jobsite during normal working hours, and a copy of the record shall be delivered to the Engineer at the completion of reconstructing each bent.

A force equal to the initial jacking load or the dead load as determined by the Contractor's Engineer, and as shown on the Contractor's design plans that have been accepted and authorized for construction by the Department, shall be applied to the structure by the temporary support system and held until all initial compression and settlement of the system is completed before bridge removal work at the location being supported is begun.

Jacking operations shall be carefully controlled and monitored to ensure that the jacking loads are applied simultaneously to prevent distortion and excessive stresses that would damage the structure. The superstructure shall be jacked as necessary to maintain the total vertical displacements at control points to less than 6 mm from the elevations recorded prior to jacking or as modified by the Engineer.

Should unanticipated displacements, cracking or other damage occur, the construction shall be discontinued until corrective measures satisfactory to the Engineer are performed. Damage to the structure as a result of the Contractor's operations shall be repaired by the Contractor in conformance with the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications.

Following completion of the reconstruction, the monitored control points shall not deviate from the vertical position by more than 6 mm from the initial survey elevations or the elevations as modified by the Engineer.

REMOVING TEMPORARY SUPPORTS

Attention is directed to Section 51-1.06C, "Removing Falsework," of the Standard Specifications. All references to falsework in this section shall also apply to temporary supports, except that when public traffic is carried on the structure on temporary supports no temporary supports shall be released until the supported concrete has attained 100 percent of the specified strength.

Attachments shall be removed from the existing structure and concrete surfaces restored to original conditions, except where permanent alterations are shown on the plans.

PAYMENT

Full compensation for temporary supports shall be considered as included in the lump sum prices paid for the various temporary bypass structure items listed in the Engineer's Estimate, and no separate payment will be made therefore.

10-1.22 OBSTRUCTIONS

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions regarding existing "Underground Facilities (Temporary Bypass Structure)."

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 150 mm in diameter or pipelines operating at pressures greater than 415 kPa (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	1-800-642-2444 1-800-227-2600
Underground Service Alert-Southern California (USA)	1-800-422-4133 1-800-227-2600

It is anticipated that the following utility facilities will be relocated prior to the dates shown:

Utility	Location	Date
Pacific Bell Fiber Optic	Existing SFOBB	1/31/04
Pacific Bell Fiber Optic	Existing Bent 50 to MH 4416	1/31/04
Pacific Bell Fiber Optic	Southgate Road	1/31/04
4kV	From 13 m Lt., Sta ED1 52+24 to 55 Rt., Sta ED1 51+90 (North - South Direction)	12/31/03
4kV	From 13 m Lt., Sta ED1 to sanitary sewer lift pump station (West-East Direction)	12/31/03

Attention is directed to Section 9-1-03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, regarding works to performed by the San Francisco Public Utilities Commission/Water Department (SFWD) and Hetch-Hetchy Water & Power:

The San Francisco Public Utilities Commission/Water Department (SFWD), and Hetch-Hetchy Water & Power will work from 7:00 a.m. to 3:30 p.m., Monday through Friday.

The Contractor shall coordinate with the San Francisco Public Utilities Commission/Water Department (SFWD), when installing the water mains, as shown on the plans and as directed by the Engineer . The Contractor shall make the necessary arrangements with the SFWD, through the Engineer, and shall submit a schedule of work, verified by a representative of the SFWD, to the Engineer. The schedule of work shall provide not less than the following number of working days, as defined in Section 8-1.06, "Time of Completion," of the Standard Specifications for the SFWD to complete their work:

Utility (address)	Work Performed by the SFWD	Working Days
Water Main	Making a connection to an existing main	5
	Chlorination including laboratory results	5
	Service change over for services larger than 50-mm (per each service)	5
	Service change over for services less than 50 mm (for up to 6 services)	1
	Excavation Safety Plans review	15

The Contractor shall notify in writing the Engineer and SFWD, at least 21 working days in advance of any disconnecting, connecting, and disinfection of water mains work to be performed by SFWD forces. Furthermore, the Contractor shall confirm the scheduled work with the Engineer, and SFWD at (415) 550-4956, at least 5 working days before the actual field work by SFWD.

The Contractor shall coordinate with Hetch-Hetchy Water & Power, through the Engineer, when disconnecting and connecting any electrical facilities and as directed by the Engineer. The Contractor shall make the necessary arrangements with the Hetch-Hetchy Water & Power, through the Engineer, and shall submit a schedule of work, verified by a representative of Hetch-Hetchy Water & Power, to the Engineer. The schedule of work shall provide not less than the following number of working days, as defined in these special provisions for the Hetch-Hetchy Water & Power to complete their work:

Utility (address)	Work Performed by Hetch-Hetchy Water & Power	Working Days
Electrical Utility Facilities	Making a disconnection service	1
	Making a connection service	3

The Contractor shall notify in writing the Engineer and HHW&P, at least 21 working days in advance of any disconnecting and connecting of electrical facilities before any work to be performed by HHW&P forces. Furthermore, the Contractor shall confirm the scheduled work with the Engineer and HHW&P at (415) 274-0333, at least 7 working days before the actual field work by HHW&P.

The existing ground seismographic station, and sanitary sewer lift pump station, including pump station, underground vault and sanitary main system, will remain in service for the duration of this contract. The telephone, fiber optic, and medium voltage underground facilities along the temporary USCG Road will also remain in service for the duration of the this contract. The Contractor shall notify the Engineer and City and County of San Francisco Public Utilities Commission at (415) 648-6882 x 1290, and the Berkeley Seismology Specialist at (510) 486-7314 or 882-9816, at least 10 working days before excavation and piling work is begun. The Contractor shall field verify the location of the cable and ensure that the monitoring cable is not damaged.

Full compensation for protecting the existing ground seismographic station and monitoring cable, and sanitary sewer lift pump station, including pump station, underground vault and sanitary main system, and the telephone, fiber optic, and medium voltage underground utility facilities along the temporary USCG Road , shall be considered as included in the contract prices paid for various items of work and no separate payment will be made therefor.

10-1.235 SEWER VIDEO SURVEY

This work shall consist of investigating, sewer cleaning as necessary to facilitate the survey, documenting, and reporting on the structural condition of the existing sewer lines, including manholes, both before and after construction from manhole to manhole as shown on the plans, at the following locations:

SEWER VIDEO SURVEY LOCATIONS

Location	Description	Remark
EDR1 on-ramp	100 mm Sewer (VCP)	North-South Direction
From 50 m Lt., Sta ED1 51+40 to sanitary sewer lift pump station	150 mm Sewer (ST), 150 m Sewer (CIP), 200 mm Sewer (VCP)	West-East Direction
60 m Lt. Sta ED1 51+80 to 35 m Lt., Sta ED1 51+85	150 mm Sewer (ST)	North-South Direction
From 10 m Rt., Sta ED1 53+40 to 30 m Rt., Sta ED1 53+20	150 mm Sewer (VCP)	North-South Direction
From 60 m Lt. Sta ED1 54+25 to 10 m Rt., Sta ED1 54+45	300 mm Sewer (VCP)	North-South Direction
From 45 m Lt., Sta ED1 54+25 to sanitary sewer lift pump station	150 mm Sewer (PVC)	West-East Direction

The Contractor shall videotape with narration the condition of the sewer to show any and all structural deficiencies including cracks, holes, exposed aggregates and reinforcing bars, honey combed areas, damaged construction joints, deteriorated concrete surfaces, infiltrations, root intrusions and missing pieces. The locations of all deficiencies shall be shown by stationing with reference points agreed upon by the Contractor and the Engineer. The Contractor shall provide the dimensions of all major structural deficiencies and provide supplemental photographs of such deficiencies when requested by the City and County of San Francisco, Bureau of Engineering.

For all the sewer locations as listed above and for all other sewer locations subjected to live loads exceeding AASHTO Standard HS-20, the Contractor shall investigate, document and report the sewer conditions before commencement and after final completion of the project.

At least 10 working days prior to investigation, the Contractor shall submit for acceptance 5 copies of the proposed operations and safety procedure to the Engineer.

The Engineer will either accept or reject such procedures within 5 working days of receipt. Approval of the procedures-will be contingent on them being satisfactory to the City and County of San Francisco. Such procedures must comply with the Safety Procedures Section of this special provision.

The Contractor shall call Hetch-Hetchy Water & Power (HHW&P) at (415) 274-0333 four days in advance for coordination and to gain access to the sewer.

The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles.

The Contractor shall prepare for the Engineer's approval, a written report documenting the results of its investigation. Approval of the report will be contingent on it being satisfactory to the City and County of San Francisco. In this report, the Contractor shall place its emphasis on; first, the deficiencies discovered during the investigation; secondly; the proposed measures to remedy such deficiencies and; thirdly, the serviceability of the present sewer.

The Contractor shall: (a) after the pre-construction sewer investigation, deliver 2 copies of the report and 2 copies of the videotape 5 working days before actual start of construction and; (b) after post-construction sewer investigation, deliver 5 copies of the final report and 2 copies of the post-construction videotape, all to the Engineer.

SAFETY PROCEDURES

Except to the extent that more explicit or more stringent requirements are stated herein, the Contractor shall comply with all applicable federal, State and local safety and health requirements and standards.

PRE-ENTRY AND CONFINED SPACE OPERATIONS

Pre-entry and confined space operations shall be performed in accordance with the provisions of Article 108 of the General Industry Safety Orders and Section 1532 of the Construction Safety Orders of Title 8 of the California Code of Regulations. These provisions shall govern:

A. Blocking of laterals.
B. Testing for the existence of dangerous water and air contamination.
C. Ventilation requirements.
D. Entry rate work within confined spaces.
E. Precautions for emergencies involving work in the sewer.
F. Other related work.

Testing shall take place for the following suspected conditions prior to entering the sewer, and at times during inspection:

1. Oxygen deficiencies.
2. Carbon dioxide.
3. Combustible gases.
4. Contaminated and infectious waste.

ADDITIONAL REQUIREMENTS

The Contractor shall provide safeguards, including traffic barriers, warning signs, barricades, temporary fences and other similar safeguards that are required for the protection of all personnel during the performance of this contract.

The Contractor shall provide to all workers and inspectors, protective, disposable clothing for sewage conditions consisting of fullbody coveralls, gloves, boot type covers on reusable footwear, eye protection, hardhats and safety tools as required by job conditions and CAL-OSHA safety rules and regulations.

The Contractor shall provide air ventilation and respiratory protection to workers and inspectors in accordance with an operation and safety procedures plan required by CAL-OSHA and accepted by the City and County of San Francisco.

The Contractor shall provide a plan for rescue of workers and investigators for review by the Engineer and for approval by the City and County of San Francisco.

PAYMENT

The contract lump sum price paid for sewer video survey shall include full compensation for furnishing all labor, materials, tools, equipment, sewer cleaning as necessary to facilitate the survey, and incidentals, and for doing all the work involved in conducting the sewer video survey, including providing plans, reports and video tape, safety devices and precautions, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.245 VITRIFIED CLAY PIPE SEWERS

PART 1.- GENERAL

SUMMARY

Scope.--This work shall consist of furnishing and installing vitrified clay pipe sewers within boundary of the Temporary Bypass Structure, where required by the Contractor's design, including excavating, lagging, backfilling, and other incidental work, necessary or required for a complete, satisfactory sewer installation, in accordance with these special provisions.

Attention is directed to Section "Contractor Design" of these special provisions.

REFERENCES

The regulatory requirements which govern the work of this Section include the following codes and standards:

A. ASTM Designation: C700.- Standard Specifications for Extra Strength Clay Pipe
B. ASTM Designation: C425 - Tentative Specification for Compression Couplings for Vitrified Clay Plain-End Pipe
C. ASTM Designation: D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700 kN-m/m3) Standard Specifications for Extra Strength Clay Pipe

SUBMITTALS

Test Reports: The Contractor shall furnish to the Engineer for approval prior to shipment of the VCP pipes copies of the certified test results indicating that the pipe furnished meets the requirements of ASTM Designation: C700. Also the Contractor shall furnish to the Engineer for approval copies of the certificate of compliance with ASTM Designation: C700 and design details of the rubber compression couplings.

HANDLING AND STORAGE

Pipes shall be handled and stored so as to prevent damage thereto, or to existing improvements. Pipes, when stored, shall be properly locked to prevent rolling.

PART 2.- PRODUCTS

PIPE

Vitrified Clay Pipes (VCP) shall conform to the ASTM Designation: C700 "Standard Specifications for Extra Strength Clay Pipe," except as modified by the plans and these special provisions.

The minimum thickness of the pipe barrel shall conform to the Regional Western Standard of the Clay Pipe Institute.

JOINTS

Joints for VCP plain-end pipe sewers 300 mm or smaller in diameter may be rubber compression couplings with stainless steel bands TYPE 316. Rubber compression couplings with Class 316 stainless steel bands shall be in accordance with the requirements of ASTM designation C425. Composition couplings with Class 316 stainless steel bands shall be in accordance with the requirements of ASTM Designation: C425 "Tentative Specification for Compression Couplings for Vitrified Clay Plain-End Pipe".

PART 3.- EXECUTION

TRENCH EXCAVATION

Trench excavations shall conform with "Excavation Safety Plans," of these special provisions.

In excavations where sand or other non-cohesive material is encountered, placing of the necessary protective systems shall commence before a depth of 1.5 meter is attained. The protective systems shall conform to "Excavation Safety Plans," of these special provisions.

Tunneling or jacking shall not be used unless specified or approved in writing by the Engineer.

During construction, the Contractor shall construct and maintain satisfactory, substantial, and appropriate barricades and steel plates at all excavations, at locations where materials are stored, and at other hazards. All such enclosures shall have warning lights adequate for public safety.

High rise warning flag units, to provide advance warning for traffic approaching excavations, will be required in all cases where motorists' visibility of the work is limited or obscured. Where required, the Contractor shall provide and maintain safe and adequate passage for vehicular and pedestrian traffic over and adjacent to trenches and other excavations by the use of barricades, bridges and other approved means.

The Contractor shall take adequate measures, commensurate with the danger involved, to prevent unauthorized entry by children or others upon the area of excavation operations. The measures shall include the provision of proper and adequate guard railing, solid or chain link fence, and the placement of a difficult to remove weighted cover on each deep shaft excavation.

The use of vibratory hammers and other vibratory equipment will be subject to the approval of the Engineer. However, such approval does not relieve the Contractor of the responsibility for any damages or injuries resulting from the use thereof.

The use of high frequency vibrating equipment, or sonic equipment, for the driving or withdrawal of sheet piling, is prohibited.

EXCAVATIONS TO BE KEPT DRY

The Contractor shall protect the work from water damage, keep excavations dry and, by proper diversion and pumping, remove there from and dispose of all water and sewage that enter upon the work. He shall provide, maintain and operate all pumping equipment required for such purpose during the time concrete or other work is being placed and thereafter as required for the protection of the work. The aforesaid requirements shall be observed as necessary or required prior to the completion of drainage facilities specified or ordered to be constructed under the contract.

Dewatering and the rate and manner of lowering the water table shall be such as to minimize any settlement that might be caused thereby.

Pumping operations for excavations shall be continuous and satisfactory from the time drawdown is first accomplished until all the concrete has been placed. The Contractor shall not allow his pumping operations to be interrupted; shall take adequate precautions to such end; and shall assume full responsibility for any damage that occurs due to fluctuating water table in the area influenced by the dewatering.

Pumping from the interior of the excavation shall be done in such a manner that there will be no movement of water through any fresh concrete, and for a period of 24 hours after a pour shall be done from a suitable sump separated from the concrete work by a watertight wall or by other effective means.

The Contractor shall at all times, by the institution of proper precautions, prevent hydrostatic uplift and flotation of the work.

MINIMUM AND MAXIMUM LENGTH OF TRENCH

The Contractor shall prepare trench subgrade for sewers not less than 9 linear meters in advance of such sewer construction.

TRENCH BACKFILL

The Contractor shall do all backfilling necessary, or required, to satisfactorily complete the work, and he shall backfill all excavations to the elevations of the required subgrade or adjacent ground, as the case may be.

Backfilling shall not commence until after sewers placed in trench or similar excavations have been properly constructed, or installed as applicable, inspected, and if required, tested.

Backfill shall be placed in a manner not to disturb, damage, nor subject such facilities to unbalanced loads or forces.

Sand Bed.--All pipe sewers shall be constructed on a prepared or natural sand bed the width of which shall be at least the full width of the pipe, and not less than 100 mm thick below the pipe after installation.

Sand Backfill.--Backfill around all sewers from the bottom of the trench to a height 150 mm above the top of pipes for the full width of the trench shall be sand only. Sand backfill material shall be in accordance with the applicable requirements of Standard Specifications.

Backfill Above Required Sand.--Backfill material above the required sand shall be in accordance with applicable the Standard Specifications.

Backfill Layer

Each layer of backfill shall be compacted both during placement and following the withdrawal of sheet piling and lagging to the top of the layer being compacted. Withdrawal of sheet piles or other trench support systems shall be done such that voids are not created from loose material under the adjacent pavement entering the trench. After the placing of backfill has been started, the Contractor shall proceed as soon as practicable with densification. All sand backfill to be densified by water shall be jetted, unless flooding is specified or otherwise authorized by the Engineer. Flooding of sand will be prohibited where sewers might be damaged, or adjacent materials softened, by the applied water. The Contractor shall make his own determination that flooding or jetting will not result in damage. Any resulting damage shall be repaired at the Contractor's expense. Sand backfill jetted, flooded, or compacted by other approved means, shall be done in horizontal layers not more than 1.5 meters thick.

Jetting of backfill shall be done in accordance with the following requirements:

1. The jet pipe shall consist of a minimum of 25 mm diameter pipe to which a minimum 38 mm diameter hose is attached at the upper end. The jet shall be of sufficient length to project to within 300 mm of the bottom of the lift being densified.
2. The Contractor shall jet to within 300 mm of the bottom of the lift and apply water in a manner, quantity and at a rate sufficient to thoroughly saturate the thickness of the lift being densified. The jet pipe shall not be moved until the backfill has collapsed and the water has been forced to the surface.
3. Voids left by the removal of sheeting, piles and similar sheeting supports shall be immediately backfilled with clean sand which shall be jetted into place to ensure dense and complete filling of the voids.

All backfill other than sand shall be placed in horizontal layers not more than 200 mm thick before compaction, and each layer shall be satisfactorily compacted by mechanical means. Flooding or jetting, in this case, will not be allowed.

Compact each layer of backfill material to not less than 95 percent relative compaction as determined by ASTM Designation D1557.

INSTALLATION OF SEWER PIPES

Pipe sections of the sewers shall be ordered in short lengths, as necessary if "T" or "Y" branches will be used, in order that such branches will be located opposite or within 0.6 m down downstream of existing side sewer locations.

Pipe sewers shall be so constructed and the sections so installed that the sections of pipe laid together form a continuous uniform line of pipe with a smooth regular interior surface. Pipe shall be laid uphill from structure to structure. Each pipe shall be laid in the proper position, on a firm 100 mm deep sand bed, and shall have uniform support and bearing for its entire length.

Pipe sewers shall be laid in conformity to the prescribed lines and grades, which shall be obtained for each pipe by measuring from a tightly stretched line running parallel with the grade and supported over the center line of the sewer by bars placed across the trench. The pipe sections shall be tightly fitted together. All adjustments of pipe to line and grade shall be made by scraping away or filling in and tamping the earth under the body of the pipe, not by blocking or wedging up. Supporting blocks shall not be used under the pipe. Pipe shall not be laid within 100 mm of any rock or other rigid object.

The Contractor shall not lay pipe in water and shall use crushed rock or some other method approved by the Engineer to maintain an appropriately dry trench.

Crushed rock bedding for pipe sewers shall by uniformly graded from No. 4 to 19 mm sieve size. Compaction shall be obtained by shovel slicing, using care not to disturb the pipe. Jetting will not be allowed to get proper compaction of the crushed rock bedding.

PAYMENT

Full compensation for furnishing and installing vitrified clay pipe sewers shown on the plans shall be considered as included in the contract lump sum prices paid for the various temporary bypass structure pay items, and no separate payment will be made therefor.

Furnishing and installing vitrified clay pipe sewers not shown on the plans will be paid for as extra work as provided in Section 4-l.03D of the Standard Specifications.

10-1.29 MAINTAINING TRAFFIC

Attention is directed to Sections 7-1.08, "Public Convenience," 7-1.09, "Public Safety," and 12, "Construction Area Traffic Control Devices," of the Standard Specifications and to the provisions in "Public Safety" of these special provisions and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7-1.09.

Attention is directed to "Cooperation," of these special provisions, regarding other Contractors' activities, and State forces during the progress of the work under this contract.

It is anticipated that, until April 30, 2004, traffic control system for lane closures on San Francisco-Oakland Bay Bridge, Route 80, as specified in the lane closure charts of these specifications will be provided by others, under Contract No. 04-0435U4.

The Contractor shall provide traffic control system for lane and full bridge closures commencing after April 30, 2004 and shall conform to the provisions in Sections "Traffic Control System for Lane Closure," and "Closure Requirements and Conditions," of these special provisions.

Attention is directed to Sections 7-1.08, "Public Convenience," of the Standard Provisions. The Contractor provides and maintains access to USCG-Quarters 9 on Southgate Rd. at the southeast corner of the intersection of Hillcrest Rd. and Southgate Rd.

Full compensation for providing and maintaining the above access shall be considered as included in the contract price paid for various items of work involved and no additional compensation will be allowed therefor.

At locations where falsework pavement lighting or pedestrian openings through falsework, temporary supports, or temporary bypass structure supports are designated, falsework lighting shall be installed in conformance with the provisions in Section 86-6.11, "Falsework Lighting," of the Standard Specifications.

Openings shall be provided through bridge falsework, temporary supports, and temporary bypass structure supports for the use of public traffic at each location where falsework, temporary supports, and temporary bypass structure supports are constructed over the streets or routes listed in the following tables. The type, minimum width, height, and number of openings at each location, and the location and maximum spacing of falsework lighting, if required for each opening, shall conform to the requirements in the tables. The width of vehicular openings shall be the clear width between temporary railings or other protective work. The spacing shown for falsework pavement lighting is the maximum distance center to center in meters between fixtures.

Br. No. 34-0004 Over Eastbound Route 80			
	Number	Width	Height
Vehicle Openings	1	16.0	4.65
Pedestrian Openings	None		
	Location	Spacing	
Falsework Pavement Lighting	R and L	7 with C7 staggered 1/2 space	
(Width and Height in meters) (R = Right side of traffic. L = Left side of traffic) (C = Centered overhead)			

Temporary Bypass Structure (Br. No. 34-0006 TEMP) Over Eastbound on-ramp detour (T4 Line)			
	Number	Width	Height
Vehicle Openings	1	9.6	4.65
Pedestrian Openings	None		
	Location	Spacing	
Falsework Pavement Lighting	R and L	9 Staggered Space	
(Width and Height in meters) (R = Right side of traffic. L = Left side of traffic) (C = Centered overhead)			

Temporary Bypass Structure (Br. No. 34-0006 TEMP) Over Existing USCG Access Road on Yerba Buena Island			
	Number	Width	Height
Vehicle Openings	1	9.6	5.6
Pedestrian Openings	1	2.5	3.0
	Location	Spacing	
Falsework Pavement Lighting	R and L	9Staggered Space	
(Width and Height in meters) (R = Right side of traffic. L = Left side of traffic) (C = Centered overhead)			

Temporary Bypass Structure (Br. No. 34-0006 TEMP) Over New USCG Access Road (by Others) on Yerba Buena Island			
	Number	Width	Height
Vehicle Openings	1	9.6	5.6
Pedestrian Openings	1	2.5	3.0
	Location	Spacing	
Falsework Pavement Lighting	R and L	9 Staggered Space	
(Width and Height in meters) (R = Right side of traffic. L = Left side of traffic) (C = Centered overhead)			

The exact locations of openings will be determined by the Engineer.

Attention is directed to "Areas For Contractor's Use," of these special provisions. Personal vehicles of the Contractor's employees shall not be parked within the right of way, on the traveled way or shoulders including any section closed to public traffic, except in the area proposed by the Contractor and approved by the Engineer. Vehicles outside areas designated as Temporary Construction Easements will be ticketed by local parking authorities.

The Contractor shall notify United States of Coast Guard Officer, at (415) 399-3504 of the Contractor's intent to begin work at least 5 working days before work is begun. The Contractor shall cooperate with United States of Coast Guard relative to handling traffic on Torpedo Factory Rd. and Macalla Rd., which leads to USCG access Rd., through the area and shall make arrangements relative to keeping the working area clear of parked vehicles.

Attention is directed to "Cooperation," of these special provisions.

The Contractor shall provide access and maintain local streets, Macalla Rd., USCG Access Rd., and Torpedo Factory Rd., which are the primary access to United States Coast Guard (USCG), United States Navy facilities, University of California-Berkeley (UCB) Seismographic Stations, and various project sites on Yerba Buena Island, in the vicinity of the contract, open to local and other Contractor's traffic at all times.

Furthermore the Contractor shall provide and maintain a 3.6 m lane access road to Sanitary Sewer Lift Pump Station, at all times. The Contractor shall submit a written request for an approval from San Francisco Public Utilities Commission through the Engineer at least 96 hours in advance for any construction operation that may block the access road to the sanitary sewer lift pump station.

Full compensation for providing and maintaining the above access shall be considered as included in the contract price paid for various items of work involved and no additional compensation will be allowed therefor.

Lanes shall be closed only during the hours shown on the charts included in this section "Maintaining Traffic." Except work required under Sections 7-1.08 and 7-1.09, work that interferes with public traffic shall be performed only during the hours shown for lane closures.

Furthermore, the Contractor shall coordinate traffic control system for lanes closure on Route 80 with the Contractor, who provides the seismic retrofit work on San Francisco-Oakland Bay Bridge, under Contract No. 04-0435U4, on Route 80 from 0.2 Mile West of San Francisco Anchorage San Francisco-Oakland Bay Bridge at KP 8.9 (PM 5.5) to East End of Yerba Buena Tunnel at KP 12.6 (PM 7.8), in the City and County of San Francisco until completion of Contract 04-0435U4.

Attention is directed to "Portable Changeable Message Sign" of these special provisions. The Contractor shall provide Portable Changeable Message Signs to support the lane closures. Location and messages to be shown on the plans or as directed by the Engineer.

Full closures of the eastbound and/or westbound direction of Route 80 will not be permitted between November 15 and January 15. The Contractor shall not perform full bridge closures (eastbound and/or westbound direction of Route 80) on the day of major events at Candlestick Park, PacBell Park, Downtown San Francisco, Treasure Island, Oakland Coliseum, and Downtown Oakland and designated holidays. Any lane closures on the day of major events at Candlestick Park, PacBell Park, Downtown San Francisco, Treasure Island, Oakland Coliseum and Downtown Oakland, and designated holidays must be approved by the Engineer.

Attention is directed to "Bridge Tolls" of these special provisions. The access of the contractor's trucks hauling material and surplus materials to and from the project site, from westbound Route 80, westbound and eastbound on and off-ramps to and from Treasure Island/Yerba Buena Island, shall not be allowed, during the peak periods from 5:00 a.m. to 10:00 a.m., and 3:00 p.m. to 7:00 p.m., on weekdays. Furthermore, the access of the contractor's trucks hauling material and surplus materials to the project site from westbound Route 80 through the bus and carpool lanes, at San Francisco-Oakland Bay Bridge toll plaza, shall not be allowed, during the peak periods from 5:00 a.m. to 10:00 a.m., and 3:00 p.m. to 7:00 p.m., on weekdays. The westbound Route 80 on-ramp, eastside of the Tunnel will be closed to contractor's traffic.

The Contractor is encouraged to organize carpool, vanpool, boat, or other modes of mass transit for transport of manpower, materials and equipment to the maximum extent, practical, from San Francisco/Oakland to and from the project site.

Designated legal holidays are: January 1st, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor, if in the opinion of the Engineer, public traffic will be better served and the work expedited. These deviations shall not be adopted by the Contractor until the Engineer has approved the deviations in writing. All other modifications will be made by contract change order.

Chart No. 1
Multilane Lane Requirements

Location: Eastbound Route 80, between eastbound off-ramp (Lt) KP 12.4 and the SFOBB Toll Plaza

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays	2	2	1	1	1	2	4																		3
Fridays	3	2	2	1	1	2	4																		
Saturdays	4	4	3	3	1	2	2	3	4																
Sundays	4	3	3	2	1	1	2	2	3	4														4	3
Day before designated legal holiday	3	2	2	1	1	2	4																		
Designated legal holidays	4	3	3	2	1	1	2	2	3	4														4	3

Legend:

1	One lane open in direction of travel
2	Two adjacent lanes open in direction of travel
3	Three adjacent lanes open in direction of travel
4	Four adjacent lanes open in direction of travel
	No lane closure allowed

REMARKS:

Chart No. 2
Multilane Lane Requirements

Location: Westbound Route 80, between the SFOBB Toll Plaza and westbound on-ramp (Rt) at KP 12.3

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays	2	1	1	1	2																4	4	4	3	
Fridays	2	1	1	1	2																	4	4	3	
Saturdays	2	2	1	1	1	2	3	4																4	
Sundays	2	2	1	1	1	2	2	3	3													4	4	3	
Day before designated legal holiday	2	1	1	1	2																	4	4	3	
Designated legal holidays	2	2	1	1	1	2	2	3	3													4	4	3	

Legend:

1	One lane open in direction of travel
2	Two adjacent lanes open in direction of travel
3	Three adjacent lanes open in direction of travel
4	Four adjacent lanes open in direction of travel
	No lane closure allowed

REMARKS:

Chart No. 3
8-Hour Full Closure - Lane Requirements

Location: Eastbound Route 80, between eastbound on-ramp (Lt) KP 12.4 and the SFOBB Toll Plaza

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays																									
Sundays		x	x	x	x	x	x	x	x																
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x	All lanes may be closed
	No lane closures allowed

REMARKS:

1. EB-80 8-Hour Full Closure: No more than two (2) closures are allowed from 1:00 a.m. to 9:00 a.m. on Sunday. The EB-80 Full Closure shall be implemented as shown on Roadway plans, CS-Sheets.
2. EB-80 8-Hour Full Closure will not be permitted between November 15 and January 15.
3. Any lane closures needed before and/or after an EB-80 8-Hour Full Closure must comply with Chart No. 1.
4. See Chart No. 7 for ramp/connector closure requirements during 8-Hour EB-80 Full Closure.

Chart No. 4
8-Hour Full Closure - Lane Requirements

Location: Westbound Route 80, between the SFOBB Toll Plaza and westbound on-ramp (Lt) KP 12.3

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays																									
Sundays		x	x	x	x	x	x	x	x																
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x	All lanes may be closed
	No lane closures allowed

REMARKS:

1. WB-80 8-Hour Full Closure: No more than two (2) closures are allowed from 1:00 a.m. to 9:00 a.m. on Sunday. The WB-80 Full Closure shall be implemented as shown on Roadway plans, CS-Sheets.
2. WB-80 8-Hour Full Closure will not be permitted between November 15 and January 15.
3. Any lane closures needed before and/or after an WB-80 8-Hour Full Closure must comply with Chart No. 2.
4. See Chart No. 8 for ramp/connector closure requirements during WB-80 8-Hour Full Closure.

Chart No. 5
24-Hour Full Closure - Lane Requirements

Location: Eastbound Route 80, between eastbound off-ramp (Lt) KP 12.4 and the SFOBB Toll Plaza

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Sundays	x	x	x	x																					
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x	All lanes may be closed
	No lane closure allowed

REMARKS:

1. EB-80 24-Hour Full Closure: One (1) closure is allowed from 4:00 a.m. on Saturday to 4:00 a.m. on Sunday. The EB-80 24-Hour Full Closure shall be implemented simultaneously with WB-80 24-Hour Full Closure (see Chart No. 6), and as shown on Roadway plans, CS-Sheets.
2. EB-80 24-Hour Full Closure will not be permitted between November 15 and January 15.
3. Any lane closures needed before and/or after an EB-80 24-Hour Full Closure must comply with Chart No. 1.
4. See Chart No. 9 for ramp/connector closure requirements during EB-80 24-Hour Full Closure.

Chart No. 6
24-Hour Full Closure - Lane Requirements

Location: Westbound Route 80, between the SFOBB Toll Plaza and westbound on-ramp (Rt) at KP 12.3

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Sundays	x	x	x	x																					
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

X	All lanes may be closed
	No lane closure allowed

REMARKS:

1. WB-80 24-Hour Full Closure: One (1) closure is allowed from 4:00 a.m. on Saturday to 4:00 a.m. on Sunday. The WB-80 24-Hour Full Closure shall be implemented simultaneously with EB-80 24-Hour Full Closure (see Chart No. 5), and as shown on Roadway plans, CS-Sheets.
2. WB-80 24-Hour Full Closure will not be permitted between November 15 and January 15.
3. Any lane closures neededbefore and/or after an WB-80 24-HourFull Closure must comply with Chart No. 2.
4. See Chart No. 10 for ramp/connector closure requirements during WB-80 24-Hour Full Closure.

Chart No. 7
8-Hour Full Closure - Ramp Lane Requirements

Location: Eastbound Route 80. Simultaneous Closure of the Yerba Buena Island On-Ramp, Eighth/Bryant Street On-Ramp, Fifth Street On-Ramp, Essex Street On-Ramp, First Street On-Ramp, and Sterling Street On-Ramp.

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays																									
Sundays	x	x	x	x	x	x	x	x	x																
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x — Ramp may be closed

(blank) — No work that interferes with public traffic will be allowed

REMARKS:

1. See Roadway plans, CS-Sheets.
2. Ramp/connector closures shall be implemented with EB-80 8-hour full bridge closures only (See Chart No. 3).

Chart No. 8
8-Hour Full Closure - Ramp Lane Requirements

Location: Westbound Route 80. Simultaneous Closure of NB-880 to WB-80 Connector, WB-580 to WB-80 Connector, NB-880 Maritime On-Ramp, and WB-80 Powell Diagonal On-Ramp.

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays																									
Sundays	x	x	x	x	x	x	x	x	x																
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x	Ramp may be closed
	No work that interferes with public traffic will be allowed

REMARKS:

1. See Roadway plans, CS-Sheets
2. Ramp/connector closures shall be implemented with WB-80 8-hour full bridge closures only (See Chart No. 4).

Chart No. 9
24-Hour Full Closure - Ramp Lane Requirements

Location: Eastbound Route 80. Simultaneous Closure of the Yerba Buena Island On-Ramp, Eighth/Bryant Street On-Ramp, Fifth Street On-Ramp, Essex Street On-Ramp, First Street On-Ramp, and Sterling Street On-Ramp.

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Sundays	x	x	x	x																					
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x Ramp may be closed

No work that interferes with public traffic will be allowed

REMARKS:

1. See Roadway plans, CS-Sheets.
2. Ramp/connector closures shall be implemented with the EB-80 24-hour full bridge closure only (See Chart No. 5).

Chart No. 10
24-Hour Full Closure - Ramp Lane Requirements

Location: Westbound Route 80. Simultaneous Closure of NB-880 to WB-80 Connector, WB-580 to WB-80 Connector, NB-880 Maritime On-Ramp, and WB-80 Powell Diagonal On-Ramp.

	a.m.												p.m.												
FROM HOUR TO HOUR	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays																									
Fridays																									
Saturdays				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Sundays	x	x	x	x																					
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x	Ramp may be closed
	No work that interferes with public traffic will be allowed

REMARKS:

1. See Roadway plans, CS-Sheets
2. Ramp/connector closures shall be implemented with the WB-80 24-hour full bridge closure only (See Chart No. 6).

Chart No. 11
Ramp Lane Requirements

Location: Eastbound Route 80 On-Ramp from Hillcrest Road on Yerba Buena Island (Right), KP 12.8.

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays	x	x	x	x	x																	x	x	x	
Fridays	x	x	x	x	x																	x	x	x	
Saturdays	x	x	x	x	x																	x	x	x	
Sundays	x	x	x	x	x																	x	x	x	
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

x	Ramp may be closed
	No work that interferes with public traffic will be allowed

REMARKS: Ramp closure is limited to one time closure or as determined by the Engineer to allow for the switch between the existing eastbound on-ramp and temporary eastbound on-ramp T4 Line (See Sheets SC-2, DE-1 and DE-2 for details).

Regardless of the construction procedure, methods and equipment selected, the Contractor shall have necessary materials and equipment on the site to erect or remove temporary system, falsework, and protective overhead covering in an expeditious manner in order that inconvenience to public traffic will be at a minimum.

10-1.30 CLOSURE REQUIREMENTS AND CONDITIONS

Lane closures shall conform to the provisions in "Maintaining Traffic" of these special provisions and these special provisions.

Attention is directed to the full closure of eastbound and/or westbound Route 80, San Francisco-Oakland Bay Bridge, as shown on the plans and these special provisions. The Contractor shall not be allowed: (a) to have more than two (2) eight (8) hour full closures on eastbound Route 80, (b) to have more than two (2) eight (8) hour full closures on westbound Route 80, (c) to have more than one (1) twenty-four (24) hour full closure on eastbound Route 80, and (d) to have more than one (1) twenty-four hour full closure on westbound Route 80. In addition, the twenty-four (24) hour full closure on eastbound Route 80 and westbound Route 80 must occur simultaneously.

Attention is directed to "Maintaining Traffic", and "Progress Schedule (Critical Path Method)" of these special provisions for the closure of all freeway facilities associated with the full closure of San Francisco-Oakland Bay Bridge, including full closure of eastbound and/or westbound Route 80. The Contractor shall include an activity on the CPM submittals that represents each potential ramp closure and each full closure of the eastbound and/or westbound direction on the San Francisco-Oakland Bay Bridge. Beginning 10 weeks before each potential full closure of the eastbound and/or westbound direction, the Contractor shall inform the Engineer of the status of each closure in writing on a weekly basis including two alternate dates for the full closure of the eastbound and/or westbound direction. The scheduled full closures and alternate dates shall be an item on the rolling 4 week schedule and discussed at the weekly schedule meeting, as appropriate.

The Engineer will have the authority to disapprove any closure schedule request, deny or abort any closure on any portion of the traveled way, when deemed necessary for the safe and efficient operation of public traffic or when necessary to resolve conflicts in closure schedules' among Contractors or other State forces performing work within the State right of way

The term closure, as used herein, is defined as the closure of a traffic lane or lanes, including ramp or connector lanes, within a single traffic control system.

CLOSURE SCHEDULE

By noon Monday, the Contractor shall submit a written schedule of planned closures for the following week period, defined as Friday noon through the following Friday noon.

The Closure Schedule shall show the locations and times when the proposed closures are to be in effect. The Contractor shall use the Closure Schedule request forms furnished by the Engineer. Closure Schedules submitted to the Engineer with incomplete, unintelligible or inaccurate information will be returned for correction and re-submittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Amendments to the Closure Schedule, including adding additional closures, shall be submitted to the Engineer, in writing, at least 3 working days in advance of a planned closure. Approval of amendments to the Closure Schedule will be at the discretion of the Engineer.

The Contractor shall confirm, in writing, all scheduled closures by no later than 8:00 a.m. 3 working days prior to the date on which the closure is to be made. Approval or denial of scheduled closures will be made no later than 4:00 p.m. 2 working days prior to the date on which the closure is to be made. Closures not confirmed or approved will not be allowed.

Confirmed closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer for the following working day. However, eight (8) hour and twenty-four (24) hour full closures shall not be allowed to take place on the following working day.

CONTINGENCY PLAN

The Contractor shall prepare a contingency plan to ensure that lane closures are removed in a timely manner. Within 10 days after the request of the Engineer, the Contractor shall submit 3 copies of the contingency plan to the Engineer. The Engineer will have 5 days to review the contingency plan. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the contingency plan within 5 days of receipt of the Engineer's comments. The Engineer will have 5 days to review the revisions. Upon the Engineer's approval of the contingency plan, 3 additional copies of the contingency plan incorporating the required changes shall be submitted to the Engineer. Minor changes or clarifications to the initial submittal may be made and attached as amendments to the contingency plan. In order to allow construction activities to proceed, the Engineer may conditionally approve the contingency plan while minor revisions or amendments are being completed.

The Contractor shall prepare a separate contingency plan specific to operations associated with each full bridge closure. Within 10 days after the request of the Engineer, and no later than 60 calendar days before the first full bridge closure, the Contractor shall submit 3 copies of the contingency plan to the Engineer. The Engineer will have 5 days to review the contingency plan. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the contingency plan within 5 days of receipt of the Engineer's comments. The Engineer will have 5 days to review the revisions. Upon the Engineer's approval of the contingency plan, 3 additional copies of the contingency plan incorporating the required changes shall be submitted to the Engineer. Minor changes or clarifications to the initial submittal may be made and attached as amendments to the contingency plan. In order to allow construction activities to proceed, the Engineer may conditionally approve the contingency plan while minor revisions or amendments are being completed.

The contingency plan for the full bridge closures at a minimum shall address the following issues:

1. Extra flashing arrow traffic control sign(s) to be on site during freeway, lane, shoulder, or ramp closures. Minimum of one extra flashing arrow sign per closure or group of closures located within 1-km of each other.
2. Extra non-traffic control related critical pieces of equipment to be on site in order to perform work being conducted in freeway, lane, shoulder, or ramp closures. Minimum of one extra critical piece of equipment per closure or group of closures located within 1-km of each other.
   Critical pieces of equipment are those which are necessary to complete the planned work in the closed freeway, lane, shoulder, or ramp closure, for which there are no close on-site substitutes, and which, if rendered inoperative, would cause the closure to have to be kept in place past the pick-up time indicated in the closure charts. An example of a critical piece of equipment is a crane, if a crane is required to do the work.
3. Communication equipment and procedures to be used to communicate with the Engineer's field representative(s). Contractor shall have communication equipment capable of instantly contacting the Engineer's field representative(s); cellular telephone(s) are adequate for this purpose.
4. The intended amount of work to be done during each freeway, lane, shoulder, or ramp closure. The amount of work shall be described in terms of length, width, and unit of measure conforming to the appropriate progress pay items.
5. The anticipated length of time it will take to completely pick-up the freeway, lane, shoulder, or ramp closure(s) rounded to the nearest 5 minutes.
6. Times for beginning and ending critical work operations for work being conducted in freeway, lane, shoulder, or ramp closures.
   Critical work operations are any work to be performed in the closed freeway, lane, shoulder, or ramp closure which will render any portion of the traveled way unsuitable for use by public traffic, or which would make the use of the traveled way unsafe, and would therefore cause the closure to have to be kept in place past the pick-up time indicated in the closure charts. An example of critical work operation may include bridge work.
7. Times at which the Contractor and the Engineer's field representative(s) will meet at this site during the work to review actual work progress, forecast the point at which work will have to be stopped in order to open the freeway, lane, shoulder, or ramp to public traffic on time, to coordinate cessation of the work, and to coordinate the beginning of lane closure pick-up with traffic control personnel.
8. Anticipated time(s) for beginning to pick-up all lane, shoulder, or ramp closure(s).

The contingency plans shall be a subset of the Contractor's formal Traffic Control Plan, as referenced in the Manual for Traffic Controls published by the Department, and shall be coordinated with the Contractor's Traffic Control Plan.

The Contractor shall verify or update his contingency plans concurrent with submission of the written schedule of planned closures.

LATE REOPENING OF CLOSURES

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. The Contractor shall not make any further closures until the Engineer has accepted a work plan, submitted by the Contractor that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 working days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to any compensation for the suspension of work resulting from the late reopening of closures.

When lane closures are implemented, for each 10-minute interval, or fraction thereof past the time specified to reopen the closure, the Department will deduct $8,500 per interval from moneys due or that may become due the Contractor under the contract.

When an eight (8) hour full closure is implemented, for each 10-minute interval, or fraction thereof past the time specified to reopen the closure of all freeway facilities associated with the eight (8) hour full closure of the San Francisco-Oakland Bay Bridge, including the full closure of eastbound and/or westbound Route 80, the Department will deduct $20,000 per interval per direction from moneys due or that may become due the Contractor under the contract.

When a twenty-four (24) hour full closure is implemented, for each 10-minute interval, or fraction thereof past the time specified to reopen the closure of all freeway facilities associated with the twenty-four (24) hour full closure of San Francisco-Oakland Bay Bridge, including the full closure of eastbound and westbound Route 80, the Department will deduct $60,000 per interval per direction from moneys due or that may become due the Contractor under the contract.

EARLY REOPENING OF CLOSURES

If the twenty-four (24) hour full bridge closure and associated ramp/connector closures (per Chart No. 5, 6, 9, and 10) are reopened at a minimum of four (4) hours prior to the specified reopening time, the Contractor may be entitled to incentive moneys, provided the early reopening of the 24 hour full bridge closure complies with lane closure requirements (per Chart No. 1 and 2). The 24 hour full bridge closure and associated ramp/connector closures shall conform to the provisions in "Maintaining Traffic" of these special provisions. The Contractor shall notify the Engineer of potential early reopening of a 24 hour full bridge closure and associated ramp/connector closures, and obtain the Engineer's approval prior to actual early reopening. It shall be the determination and approval of the Engineer on the specific method of measurement of the early reopening of the closure. The minimum four-hour period of early reopening measured from the mandatory time the 24 hour full bridge closure and associated ramp/connector closures are permitted will be the basis for the incentive payment.

For a minimum four-hour early reopening of the 24 hour full bridge closure and associated ramp/connector closures, the Contractor will receive an incentive payment of $500,000 for the eastbound direction and/or $250,000 for the westbound direction.

COMPENSATION

The Contractor shall notify the Engineer of any delay in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09:

A. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these special provisions, except that the Contractor will not be entitled to any compensation for amendments to the Closure Schedule that are not approved.
B. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure prior to the time designated in the approved Closure Schedule, any delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09.

10-1.31 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE

A traffic control system shall consist of closing traffic lanes and ramps in conformance with the details shown on the plans, the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" of these special provisions, and these special provisions.

The provisions in this section will not relieve the Contractor from the responsibility to provide additional devices or take measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

It is anticipated that, until April 30, 2004, the traffic control required for work on the bridge deck of San Francisco-Oakland Bay Bridge within the limits of this contract will be provided only by another State contractor. Attention is directed to "Maintaining Traffic" and "Closure Requirements and Conditions" elsewhere in these special provisions.

Attention is directed to "Cooperation," of these special provisions, regarding other Contractors' activities, and State forces during the progress of the work under this contract. Maintenance work by State forces shall be permitted where such work will not impact the Contractor's operations or when emergency work by State forces is required. The Contractor shall coordinate his operations with maintenance forces and other contractors performing work within the contract limits of this contract. If the provided freeway lane closure is not used by the Contractor for the approved scheduled work for lane closure, the cost for providing a freeway lane closure will be deducted from the money due to the Contractor.

The Contractor shall coordinate the lane closure schedule with the State Contractor providing the traffic control at the San Francisco-Oakland Bay Bridge. The Contractor shall be responsible for all costs incurred to other contractors and State forces in the event that the work for this contract is not finished as scheduled and the lane closures cannot be removed per the approved closure schedule.

All access to the work from either the upper or lower deck of the bridge, which may be contemplated by the Contractor, will be subject to coordination with other contracts, which may be in progress during this contract. The determination of which of the lanes will be closed for access to the work will be made in accordance with these special provision, subsections "Closure Requirements and Conditions".

Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining or removing components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining or removing components when operated within a stationary lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on vehicles which are being used to place, maintain and remove components of a traffic control system and shall be in place before a lane closure requiring its use is completed.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

When lane and ramp closures are made for work periods only, at the end of each work period, components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations designated by the Engineer within the limits of the highway right of way.

The contract lump sum price paid for traffic control system shall include full compensation for furnishing all labor, materials (including signs), tools, equipment, and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control system shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment," of the Standard Specifications for increased work and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

EXISTING UNDERGROUND FACILITIES (TEMPORARY BYPASS STRUCTURE)

Attention is directed to "Obstructions," of these special provisions.

Attention is directed to "Contractor's Design," and "Temporary Bypass Structure," of these special provisions, regarding the design and construction of the temporary bypass structure.

The existence of underground facilities as shown on the plans, which may be affected by the Contractor's operations, design and/or construction of the temporary bypass structure, may require potholing, protection, rearrangement and/or relocation of the existing underground facilities.,~~ which may~~

Work affecting the US Navy or USCG underground facilities requires that the Contractor's coordinate with the local agencies who have the jurisdictions over the US Navy or USCG's underground facilities. The Contractor shall make the necessary arrangements with the following local agencies:

Utility	Local Agency to be Contacted	Phone Number
Water	San Francisco Public Utilities Commission/Water Department (SFWD)	(415) 550-4956
Gas, Sanitary Sewer, and Electrical	Hetch-Hetchy Water & Power (HHW&P)	(415) 274-0333

Protection of Utilities

Existing underground facilities which are within the limits of the temporary and permanent viaduct support structures as shown on the plans and are not in conflict with the Contractor's operations, design and/or construction of the temporary bypass structure, shall remain and be protected in place.

Full compensation for conforming to the above requirements shall be considered as included in the contract prices paid for each segment of the temporary bypass structure listed in the Engineer's Estimate and no additional compensation will be allowed therefor.

Potholing of Utilities

Upon written approval of the Engineer and the utility owners, existing underground facilities, which are in possible conflict with the design and construction of temporary bypass structure including the temporary support structures, shall be potholed by the Contractor.

Full compensation for conforming to the above requirements shall be considered as included in the contract prices paid for each segment of the temporary bypass structure listed in the Engineer's Estimate and no additional compensation will be allowed therefor.

Potholing of existing underground facilities encountered during construction, which are not shown on the plans, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Relocation of Utilities

Relocation of existing underground facilities, including removal and/or abandonment of existing underground facilitiies, which are in conflict with the Contractor's operations, design and/or construction of the temporary bypass structure, shall be rearranged (as used herein, rearrangement includes installation, relocation, or alteration) after the approval of the Engineer and the utility owners.

The relocation of the existing US Navy or USCG underground facilities, water mains, sewer lines, and gas lines, shall conform to "Water Pipe (Underground)," "Vitrified Clay Pipe Sewers," "Remove Utilities," "Abandon Utilities" and "Underground Gas Distribution Piping," of these special provisions.

The Contractor shall submit for approval utility relocation plans to the Engineer. The time to be provided for the Engineer's review of the utility relocation plans shall be 28 days.

In the event that the Engineer fails to review the utility relocation plans within the specified time, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by the Engineer's failure to review the utility relocation plans within the specified time, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

Attention is directed to Section 9-1-03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, regarding works to be performed by the SFWD and HHW&P:

The SFWD and HHW&P will work from 7:00 a.m. to 3:30 p.m., Monday through Friday.

The Contractor shall make the necessary arrangements with the utility owners, through the Engineer, and shall submit a schedule of work, verified by a representative of the utility owners, to the Engineer. The schedule of work shall provide not less than the following specified number of working days for SFWD and HHW&P to complete their work:

Utility (address)	Work Description	Working Days
Water Main	Work Performed by the SFWD	
	Making a connection to an existing main	5
	Chlorination including laboratory results	5
	Service change over for services larger than 50-mm (per each service)	5
	Service change over for services less than 50 mm (for up to 6 services)	1
	Excavation Safety Plans review	15
Electrical Utility Facilities	Work Performed by HHW&P	
	Making a disconnection service	1
	Making a connection service	3

The Contractor shall notify in writing the Engineer and SFWD, at least 21 working days in advance before any work to be performed by SFWD forces for disconnecting and connecting of the water main, and disinfection. Furthermore, the Contractor shall confirm the scheduled work with the Engineer, and SFWD at (415)550-4956, at least 5 working days before the actual field work by SFWD.

The Contractor shall notify in writing the Engineer and HHW&P, at least 21 working days in advance before any work to be performed by HHW&P forces for disconnecting and connecting of electrical facilities. Furthermore, the Contractor shall confirm the scheduled work with the Engineer and HHW&P at (415) 274-0333, at least 7 working days before the actual field work by HHW&P.

Full compensation for conforming to the above requirements shall be considered as included in the contract prices paid for each segment of the temporary bypass structure listed in the Engineer's Estimate and no additional compensation will be allowed therefor.

Relocation of the existing underground facilities, which are not shown on the plans, are encountered during construction, and are within the limits of the temporary and permanent viaduct support structures, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Remove Utilities

Existing underground facilities, which are required to be removed as a result of rearranging underground facilities that are in conflict with the Contractor's operation, design and construction of the temporary bypass structure, shall be removed and disposed of.

If the Contractor elects to abandon the existing underground facilities, the underground facilities to be abandoned shall be abandoned in place in conformance with the provisions in "Abandon Utilities," of these special provisions.

Abandon Utilities

Existing underground facilities , which are required to be abandoned as a result of rearranging underground facilities and as approved by the Engineer , shall be abandoned in place. Resulting openings into existing structures that are to remain in place shall be plugged with commercial quality concrete containing not less than 300 kg of cement per cubic meter.

Abandoning underground facilities in place shall conform to the following:

A. Underground facilities that intersect the side slopes shall be removed to a depth of not less than one meter measured normal to the plane of the finished side slope, before being abandoned.
B. Underground facilities 300 mm in diameter and larger, shall, at the Contractor's option, be backfilled with either sand, controlled low strength material or slurry cement backfill conforming to the provisions in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications by any method acceptable to the Engineer that completely fills the pipe. Sand backfill material shall be clean, free draining, and free from roots and other deleterious substances.
C. The ends of underground facilities shall be securely closed by a 150 mm thick tight fitting plug or wall of commercial quality concrete.

Underground facilities shall not be abandoned until their use is no longer required. The Contractor shall notify the Engineer in advance of any intended culvert or pipeline abandonment.

10-3.01 DESCRIPTION

The following electrical work shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions:

LIGHTING SYSTEM DESIGN

Lighting system design shall include but not limited to the following:

The Contractor shall design a lighting system for the westbound and eastbound Temporary Bypass Structure (TBS) per Caltrans Lighting Standard. Lighting fixtures on westbound shall be mounted on the pole as shown on ES-6A of Standard Plans. Lighting fixtures on eastbound shall be pendant soffit mounted as shown on ES-9E. Attention is directed to "Contractor's Design" of these special provisions.

Lighting shall be designed to minimize glare to the motorists, the new lighting fixtures shall be similar to the existing (such as type, voltage input, and lamp wattage). Minimum illumination level of 1.5 lux shall be maintained along edge of travel way across the structure in addition to illumination level requirements at connection points. The lighting system will be 480 V, 3-phase. The wire size for the lighting circuit shall be 3/C #6+G AWG armored for each light circuit.

The Contractor shall submit to the Engineer all design drawings, engineering calculations (illumination levels) and estimate for approval. The Engineer will be allowed at least 15 working days for the review of the approval documents.

ELECTRICAL WORK (Stage 2)

This work shall include but not limited to intercepting all eastbound circuits to the east of vault No.5, route the circuits to vault No. 2 and splice or terminate to the existing splice/terminal boxes as shown on the plans. The following circuits shall be intercepted:

1. Install 15 kV splice box at approximately Sta. 55+80. Intercept existing 12.47 kV cable, splice to temporary armored cable and reroute to a splice box in vault No. 2 as shown on the plans. Splice the 12.47 kV armored cable to the existing 12.47 kV cable in vault No.2.
2. Locate existing DC terminal box on the bridge, install and terminate new 40/C No. 14 armored cable and reroute to a terminal box in vault No.-2 as shown on the plans. Terminate the 40/C armored cable to the terminal box in vault No. 2. The terminal box will be supplied and installed by others.
3. Locate existing RTU/Telephone communication terminal box on the bridge, install and terminate new 50 pairs, No. 18 AWG, armored cable and reroute to a terminal box in vault No. 2 as shown on the plans. Terminate the 50 pairs armored cable to the terminal box in vault No.2. The terminal box will be supplied and installed by others.
4. Locate and intercept traffic operation system circuits as listed on the plans. Install a new TOS terminal box at approximately sta. 56+40. Install and terminate new TOS armored cables and reroute to a terminal box in vault No. 2 as shown on the plans. Terminate TOS armored cables to the terminal box in vault No. 2. The terminal box will be supplied and installed by others.
5. The Contractor shall determine the exact cable routing and location of cable supports and splice boxes.
6. Before completion of all electrical work, the Contractor shall label all conductors and cables by type and circuit number.
7. Install Temporary Bypass roadway lighting poles, pendant soffits and fixtures.
8. Install and terminate new armored cable lighting circuits from the light fixtures to the terminal box in vault No. 2.
9. Conduct cable continuity and insulation tests on all circuits.
10. Conduct cable continuity test and functional test on all new lighting circuits.
11. Install and terminate cable itemized under "Cost Break-down" elsewhere in these special provisions.
12. Install 8 new State-furnished wireless solar powered call boxes and replace 4 existing outdated call boxes with 4 new solar powered call boxes.
13. Locate existing 96 VDC terminal boxes on the bridge, splice and route the armored cables to a terminal box in vault No. 2. The terminal box will be supplied and installed by others.
14. Install one 3/C #6+G, 480 V armored cable for the new exit sign. Route the armored cable to a terminal box in vault No.2 as shown on the plans. Terminate the armored cable to the terminal box. The terminal box will be supplied and installed by others. .
15. Install and terminate cables as shown on the plans and cable schedule.

10-3.02 COST BREAK-DOWN

Cost break-downs shall conform to the provisions in Section 86-1.03, "Cost Break-Down," of the Standard Specifications and these special provisions.

The Engineer shall be furnished a cost break-down for each contract lump sum item of work described in this Section 10-3.

The cost break-down shall be submitted to the Engineer for approval within 30 days after the contract has been approved. The cost break-down shall be approved, in writing, by the Engineer before any partial payment for the items of electrical work will be made.

The cost break-down for the Electrical Work (Stage 2) shall be broken down, as a minimum, to include the following listed items in addition to those listed in the Standard Specifications:

Electrical Work (Stage 2). Electrical installation is shown on the plans and shall include, but not be limited to the following additional items of the cost break-down:

1. Cables and cable terminations – list each size and type.
2. Termination boxes, splice boxes pull and junction boxes – list each size and type.
3. Cable anchors, fittings and supports – list each size and type.
4. Equipment required for functional testing – list size and type.
5. Equipment rental – list each over $500.00 – list size and type.
6. Light poles – list size and type.
7. Light fixtures – list size and type.
8. Soffit luminaires – list size and type.
9. Electrical hardware – list size and type.

10-4.04 UNDERGROUND FUEL GAS DISTRIBUTION PIPING

PART 1.- GENERAL

SUMMARY.--

Scope.—This work shall include the following items of the fuel gas distribution piping within boundary of the Temporary Bypass Structure, where required by the Contractor's design, in accordance with standard specifications and these special provisions:

A. Furnishing and installing plastic pipe;
B. Abandoning of existing gas pipe; and
C. Removing of existing gas pipes as directed by the Engineer.

Attention is directed to Sections 19 "Earthwork," 64 "Plastic Pipe," 65 "Reinforced Concrete Pipe," and 66 "Corrugated Metal Pipe," of the Standard Specifications, and "Contractor Design" of these special provisions.

REFERENCES.--

The regulatory requirements which govern the work of this Section include the following codes and standards.

A. A. US Department of Transportation Pipeline Safety Regulations, Code of Federal Regulations (CFR) Title 49, Part 192, "Transportation of Natural or Other Gases by Pipeline: Minimum Federal Safety Standards".
B. ASTM Designation: D2513 - Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings.
C. ASTM Designation: D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.
D. ASTM Designation: D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.
E. ASTM Designation: D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
F. ASTM Designation: D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
G. ASTM Designation: F1055 - Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.
H. ASTM Designation: F1924 - Standard Specification for Plastic Mechanical Fittings for Use on Outside Diameter Controlled Polyethylene Gas Distribution Pipe and Tubing.
I. PPI TR-3 - Policies and Procedures for Developing Hydrostatic Design Bases (HDB), Pressure Design Bases (PDB) and Minimum Required Strengths (MRS) for Thermoplastic Piping Materials or Pipe.
J. PPI TR-4 - PPI Listing of Hydrostatic Design Bases (HDB), Pressure Design Bases (PDB) and Minimum Required Strengths (MRS) for Thermoplastic Piping Materials.
K. PPI TR-33 - Generic Butt Fusion Joining Procedures for Polyethylene (PE) Gas Pipe.
L. NFPA 58 - National Fire Protection Association, Storage and Handling Liquefied Petroleum Gas

PART 2.- PRODUCTS

General.--All polyethylene pipe, tubing and fittings furnished under this specification shall conform to all applicable provisions and requirements of the latest revision of the US Department of Transportation Pipeline Safety Regulations (CFR) Title 49, Part 192, "Transportation of Natural or Other Gases by Pipeline: Minimum Federal Safety Standards, and, by inclusion, all appropriate standards referenced therein.

MATERIALS

Polyethylene compounds utilized in the manufacture of products furnished under this specification shall have a grade of PE24 or PE34, and minimum cell classification of PE213363 or PE334464, as defined in ASTM Designation: D3350. In conformance with ASTM Designation: D2513, they shall have a PPI recommended hydrostatic design basis (HDB) of 1250 psi (8.6 Mpa) (PE2406) or 1600 psi (11.0 Mpa) (PE3408) at a temperature of 73.4°F (23°C). In addition, this HDB shall be substantiated by showing that extrapolation of the stress regression curve is linear to the 438,000 hour intercept in accordance with ASTM Designation: D2837.

When any plastic material is used for transportation of liquefied petroleum gas (LPG), it must qualify for use through testing with LPG as the test medium, and have a hydrostatic design basis category of at least 1,000-psi (6.9 MPa) at 73.4 F (23 C), as determined by ASTM Designation: D2837. Materials that qualify for natural gas service and that carry a recommended HDB at 140 F (60 C) in accordance with ASTM Designation: D2513 also qualify for LPG service without the need for further testing.

Clean rework material of the same type and grade, generated from the manufacturer's own pipe and fitting production, may be used by the same manufacturer as long as the pipe, tubing or fitting produced meet all the requirements of ASTM Designation: D2513.

Pipe and Tubing.--Pipe and Tubing furnished under this specification shall be manufactured using compounds complying with the requirements of Section II, above, and all appropriate requirements of Part 192 of the Minimum Federal Safety Standards. Dimensional characteristics (including outside diameter, wall thickness, toe-in, ovality and length) and performance characteristics (including chemical resistance, sustained pressure, elevated temperature service, burst pressure/apparent tensile strength, joining, squeeze-off and outdoor storage stability) shall conform to the requirements of ASTM Designation: D2513 including applicable annexes. Pipe and Tubing may be supplied in either coils or straight lengths.

Fittings.--Polyethylene fittings furnished under this specification shall be manufactured using compounds complying with the requirements of Section II, above and all appropriate requirements of Part 192 of the Minimum Federal Safety Standards. Socket type fittings shall comply with ASTM Designation: D2683. Butt fusion fittings shall comply with ASTM Designation: D3261. Electrofusion fittings shall comply with ASTM Designation: F1055. Plastic mechanical fittings shall comply with ASTM Designation: F1924. Mechanical fittings produced from metallic or materials other than plastics listed in Section II shall be approved only after submission of appropriate test data and service histories indicating their acceptability for the intended service. In addition, all mechanical fittings shall be categorized for pullout resistance as stated in ASTM Designation: D2513 and identified as to the appropriate category. Plastic valves shall meet the requirements of ANSI Standard B16.40. In all cases, the specifications and requirements for the fittings supplied shall comply with the appropriate sections of Part 192 of the Minimum Federal Safety Standards or NFPA 58 LP Gas Code.

Marking.--Pipe and tubing shall be marked in accordance with ASTM Designation: D2513. Marking shall be legible and shall remain legible under normal handling and installation practices. Indent marking may be utilized provided (1) the marking does not reduce the wall thickness to less than the minimum value for the pipe or tubing, (2) it has been demonstrated that these marks have no effect on the long term strength of the pipe or tubing and (3) the marking will not provide leakage channels when approved elastomeric gasket compression fittings are used to make joints. Fusion fittings shall be marked on the body or hub. Marking shall be in accordance with ASTM Designation: D2513 or the standard to which the fitting is manufactured. Mechanical fittings shall be marked in accordance with the fitting standard to which it is manufactured or Part 192 of the Minimum Federal Safety Standard Section 192.63.

Workmanship.--Pipe, tubing and fittings shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, blisters, dents, or other injurious defects. The pipe, tubing, and fittings shall be as uniform as commercially practicable in color, opacity, density, and other physical properties.

Quality Control.--Quality Control shall be in accordance with the requirements given in ASTM Designation: D2513 including applicable annexes.

Joints.--The manufacturer of pipe, tubing and or fittings supplied under this specification shall establish and certify heat fusion procedures for the joining of the materials supplied in accordance with the applicable section of (CFR) Title 49, Part 192 "Transportation of Natural and or Other Gases by Pipeline: Minimum Federal Safety Standards" paragraph 192.283. Qualified fusion procedures, with appropriate supporting data, shall be furnished. Suitable generic fusion procedures are included in PPI TR-33, Generic Butt Fusion Joining Procedure for Polyethylene (PE) Gas Pipe.

PART 3.- EXECUTION

Abandon in place.--Existing fuel gas distribution piping required by Contractor's design as Abandon In Place shall be physically disconnected from the piping system. Disconnect any service lines as close to the abandoned main as possible. Purge lines to be abandoned with air, water, or inert gas. After purging, the gas concentration shall be no higher than one per cent. Cap or plug open ends of all abandoned pipelines. Close any valves left on the abandoned main. Remove all above-grade valves, risers, vaults, valve box covers and other appurtenances. Backfill all voids.

Removal and disposal.--Existing fuel gas distribution piping required by Contractor's design as Remove And Dispose shall be physically disconnected from the piping system. Disconnect any service lines as close to the abandoned main as possible. Purge lines to be removed with air, water, or inert gas. After purging, the gas concentration shall be no higher than one per cent. Remove the pipelines and dispose. Remove all above-grade valves, risers, vaults, valve box covers and other appurtenances. Backfill all voids.

INSTALLATION.--

Earthwork.--

Excavation, backfill and shaped bedding shall conform to the provisions in Section 19-3, "Structure Excavation and Backfill," except at locations where pipe is required by Contractor's design to be backfilled with concrete, the backfill shall conform to the provisions in Section 64-1.06, "Concrete Backfill."

Plastic pipe shall be laid in a trench excavated to the lines and grades established by the Contractor's design and as directed by the Engineer. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the pipe.

Laying pressure Pipe.--

Plastic pipe shall be laid and jointed in accordance with generally accepted practice and the following provisions in order to be suitable for the purpose intended.

Necessary facilities shall be provided for lowering and properly placing the sections of pipe in the trench.

The pipe shall be laid to line and grade with the sections joined according to approved joining procedures.

Every precaution shall be taken to prevent flooding the pipe trench before backfilling operations.

Install and secure a No. 10 tracer wire over all plastic pipes.

After the pipe has been laid, place and compact backfill to a minimum of 0.6-m above the pipe, leaving joints completely exposed.

A pneumatic pressure test shall be conducted as follows:

1. Pressurize the line to 35 Kpa and hold for ten minutes. Inspect all joints for leaks with an approved bubble-detection fluid.
2. Increase the pressure to 200 Kpa and hold for ten minutes.
3. Increase the pressure to 415 Kpa and hold for thirty minutes. Inspect all joints for leaks with an approved bubble-detection fluid.
4. Record both temperature and pressure at all intervals. No visible leaks or pressure change in excess of that occurring via temperature change is allowed.

The Contractor shall, at the Contractor's expense, furnish all equipment, materials and labor for making the required test. All tests shall be made in the presence of the Engineer. Any leakage shall be stopped in a manner satisfactory to the Engineer, and the test repeated until there is no leakage.

The Contractor may, at the Contractor's option, maintain the pipe line full of air for not more than 24 hours prior to commencing the final test period.

Tie-in to existing system.--After completion of testing and acceptance, the new line shall be tied in to the existing system. Coordinate system shutdown with the existing utility. Install the transition fittings according to approved installation procedures. Join the new line at the transition fitting. Pressurize the system and test the tie-in with a bubble-detection fluid. No visible leaks are allowed. This operation shall be witnessed and signed by a representative for the Owning utility.

PAYMENT

Full compensation for underground fuel gas distribution piping shown on the plans shall be considered as included in the contract lump sum prices paid for the various temporary bypass structure pay items, and no separate payment will be made therefor.

Underground fuel gas distribution piping not shown on the plans will be paid for as extra work as provided in Section 4-l.03D of the Standard Specifications.

ENGINEER'S ESTIMATE
04-0120R4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
1	031072	ELECTRONIC MOBILE DAILY DIARY COMPUTER SYSTEM DATA DELIVERY	LS	LUMP SUM	LUMP SUM	
2	031073	CONSTRUCTION SURVEYING	LS	LUMP SUM	LUMP SUM	
3	031074	PHOTO SURVEY OF EXISTING FACILITIES	LS	LUMP SUM	LUMP SUM	
4	031075	TURBIDITY CONTROL	LS	LUMP SUM	LUMP SUM	
5	031146	VIBRATION MONITORING	LS	LUMP SUM	LUMP SUM	
6	BLANK					
7	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM	LUMP SUM	
8	070018	TIME-RELATED OVERHEAD	LS	LUMP SUM	LUMP SUM	
9 (S)	071325	TEMPORARY FENCE (TYPE ESA)	M	730		
10	049372	TEMPORARY BYPASS STRUCTURE, EAST TIE-IN	LS	LUMP SUM	LUMP SUM	
11	049373	TEMPORARY BYPASS STRUCTURE, VIADUCT	LS	LUMP SUM	LUMP SUM	
12	049374	TEMPORARY BYPASS STRUCTURE, WEST TIE-IN	LS	LUMP SUM	LUMP SUM	
13 (S)	031087	CONTRACTOR DESIGN	LS	LUMP SUM	LUMP SUM	
14 (S)	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM	LUMP SUM	
15 (S)	074020	WATER POLLUTION CONTROL	LS	LUMP SUM	LUMP SUM	
16 (S)	074025	TEMPORARY SOIL STABILIZER	M2	17 900		
17 (S)	074029	TEMPORARY SILT FENCE	M	1070		
18 (S)	031077	TEMPORARY PERIMETER CONTROL BARRIER	M	160		
19 (S)	074032	TEMPORARY CONCRETE WASHOUT FACILITY	LS	LUMP SUM	LUMP SUM	
20 (S)	074033	TEMPORARY CONSTRUCTION ENTRANCE	EA	6		

ENGINEER'S ESTIMATE
04-0120R4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
21 (S)	074034	TEMPORARY COVER	M2	5000		
22 (S)	031078	TEMPORARY DRAINAGE INLET PROTECTION	EA	42		
23 (S)	031079	STABILIZED CONSTRUCTION ROADWAY	M3	1990		
24	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM	LUMP SUM	
25 (S)	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
26 (S)	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	1		
27 (S)	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	6770		
28 (S)	120165	CHANNELIZER (SURFACE MOUNTED)	EA	60		
29 (S)	120166	CHANNELIZER (SURFACE MOUNTED) (LEFT IN PLACE)	EA	40		
30 (S)	120300	TEMPORARY PAVEMENT MARKER	EA	1750		
31 (S)	031080	TEMPORARY PERIMETER FENCE (TYPE WM-1.8)	M	390		
32 (S)	128650	PORTABLE CHANGEABLE MESSAGE SIGN	EA	47		
33	129000	TEMPORARY RAILING (TYPE K)	M	654		
34	129100	TEMPORARY CRASH CUSHION MODULE	EA	14		
35	031081	TEMPORARY CRASH CUSHION (ADIEM)	EA	3		
36	150662	REMOVE METAL BEAM GUARD RAILING	M	12		
37 (S)	150714	REMOVE THERMOPLASTIC TRAFFIC STRIPE	M	1720		
38	152386	RELOCATE ROADSIDE SIGN-ONE POST	EA	3		
39	156585	REMOVE CRASH CUSHION	EA	1		
40 (S)	157550	BRIDGE REMOVAL	LS	LUMP SUM	LUMP SUM	

ENGINEER'S ESTIMATE
04-0120R4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
41 (S)	157561	BRIDGE REMOVAL (PORTION) , LOCATION A	LS	LUMP SUM	LUMP SUM	
42 (S)	157562	BRIDGE REMOVAL (PORTION), LOCATION B	LS	LUMP SUM	LUMP SUM	
43	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
44	190101	ROADWAY EXCAVATION	M3	1450		
45	031082	ROADWAY EXCAVATION (BRIDGE REMOVAL) (HAZARDOUS)	M3	800		
46 (S)	031083	EROSION CONTROL (NETTING)	M2	5220		
47 (S)	203003	STRAW (EROSION CONTROL)	TONN	5.2		
48 (S)	203014	FIBER (EROSION CONTROL)	KG	1490		
49 (S)	031084	EROSION CONTROL (TYPE B)	M2	2150		
50 (S)	203021	FIBER ROLLS	M	1520		
51 (S)	203024	COMPOST (EROSION CONTROL)	KG	4510		
52 (S)	203026	MOVE -IN/MOVE-OUT (EROSION CONTROL)	EA	7		
53 (S)	203045	PURE LIVE SEED (EROSION CONTROL)	KG	280		
54 (S)	203061	STABILIZING EMULSION (EROSION CONTROL)	KG	340		
55	220101	FINISHING ROADWAY	LS	LUMP SUM	LUMP SUM	
56	250401	CLASS 4 AGGREGATE SUBBASE	M3	350		
57	260301	CLASS 3 AGGREGATE BASE	M3	500		
58	390207	RUBBERIZED ASPHALT CONCRETE (TYPE O)	TONN	1690		
59	401108	REPLACE CONCRETE PAVEMENT (RAPID STRENGTH CONCRETE)	M3	30		
60	BLANK					

ENGINEER'S ESTIMATE
04-0120R4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	566011	ROADSIDE SIGN - ONE POST	EA	28		
62	727901	MINOR CONCRETE (DITCH LINING)	M3	20		
63 (S)	800391	CHAIN LINK FENCE (TYPE CL-1.8)	M	6		
64 (S)	800394	CHAIN LINK FENCE (TYPE CL-1.8, EXTENSION ARM)	M	70		
65 (S)	802592	2.4 M CHAIN LINK GATE (TYPE CL-1.8)	EA	2		
66	820107	DELINEATOR (CLASS 1)	EA	11		
67	820134	OBJECT MARKER (TYPE P)	EA	3		
68	833080	CONCRETE BARRIER (TYPE K)	M	560		
69 (S)	839603	CRASH CUSHION (ADIEM)	EA	2		
70 (S)	840515	THERMOPLASTIC PAVEMENT MARKING	M2	29		
71 (S)	840561	100 MM THERMOPLASTIC TRAFFIC STRIPE	M	3230		
72 (S)	840563	200 MM THERMOPLASTIC TRAFFIC STRIPE	M	380		
73 (S)	840564	200 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 3.66 M - 0.92 M)	M	1960		
74 (S)	031088	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 10.48 M - 4.26 M)	M	3610		
75 (S)	850101	PAVEMENT MARKER (NON-REFLECTIVE)	EA	1170		
76 (S)	850102	PAVEMENT MARKER (REFLECTIVE)	EA	580		
77	BLANK					
78 (S)	031090	ELECTRICAL WORK (STAGE 2)	LS	LUMP SUM	LUMP SUM	
79 (S)	031091	300 MM WATER MAIN	M	73		
80 (S)	031092	100 MM WATER LINE	M	74		

ENGINEER'S ESTIMATE
04-0120R4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81 (S)	031093	12 NPS WATER MAIN (TEMPORARY BYPASS STRUCTURE)	M	410		
82 (S)	031094	4 NPS WATER LINE (TEMPORARY BYPASS STRUCTURE)	M	410		
83	BLANK					
84	031695	SEWER VIDEO SURVEY	M	570		
85	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID (A): _____

TOTAL BID (B):

$ 100,000.00 **x** _____ _____

(Cost Per Day) **(Enter Working Days Bid)**
(Not To Exceed 668 Days)

TOTAL BASIS FOR COMPARISON OF BIDS: (A+B): = _____

TOTAL BID: _____